NETWORK WORLD

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Study cites 'new age' of networking

By Wayne Eckerson
Staff Writer

PARSIPPANY, N.J. — Fortune 1,000 companies are committed to expanding the role of communications in their business and are devoting a growing percentage of their operating budget to network spending, according to a recently released study.

Also indicative of the growing strategic importance of networking is the fact that control over telecommunications has shifted to data processing and MIS from departments such as finance and administration.

According to the study conducted by The Eastern Management Group, based here, this shift has occurred in more than three-quarters of the Fortune 1,000 companies surveyed.

The report said a "new age of corporate telecommunications has arrived. Corporate America's commitment to the expanding role of telecommunications is evident."

According to the study, conducted throughout 1988, expenditures on communications are increasing steadily as a percentage of overall corporate operating budgets. In addition, network spending is growing faster than spending on DP.

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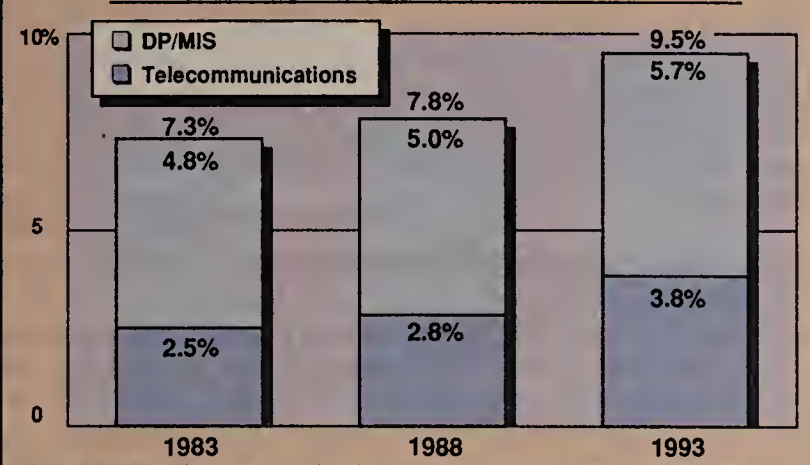
Users ramp up network spending



Figures reflect the spending by Fortune 1,000 companies on DP/MIS and telecommunications as a percentage of total operating budget.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: THE EASTERN MANAGEMENT GROUP, PARSIPPANY, N.J.

EDI delivers dividends for freight-hauling company

For over a decade, EDI has helped Leaseway coordinate shipments for its largest customers.

By Paul Desmond
Staff Writer

BEACHWOOD, Ohio — While some users are just beginning to realize the benefits of electronic data interchange (EDI), it has been an integral part of Leaseway Transportation Corp.'s business for more than a decade.

EDI makes it possible for Leaseway to coordinate deliveries for about 50 of its 300 largest customers, including the three major U.S. automakers. Those 50 customers generate more than 80% of the freight-hauling company's $1.4 billion annual revenue, said Gary Cross, Leaseway's vice-president of information resources.

EDI cuts costs and reduces errors by eliminating manual transcription of information exchanged by Leaseway and its customers, Cross said. In addition, EDI lets the company optimize its truck route planning by providing up-to-the-minute data about where cargo has to be picked up, where it is going and when it has to be there.

"The latest decision you can make is typically the best decision because you have more information available," Cross said.

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AT&T declares war on foreign vendors

Alleges Asian firms are dumping small business systems in U.S.; threatens to pull out of market.

By Bob Brown
Senior Writer

NEW YORK — AT&T last week was expected to file a petition with the U.S. government that charges at least 12 Far Eastern firms with dumping small business communications products in the U.S.

AT&T alleges that the foreign firms are trying to win market share by selling key systems and small private branch exchanges in the U.S. at prices far below what they are sold for in their home market.

The product dumping has "severely injured" AT&T and other U.S. manufacturers by forcing them to sell products at razor-thin margins, AT&T said. If the situation is not remedied, AT&T warned it may pull out of the small business voice communications equipment market. Such a move would not happen for at least a year since no action on AT&T's petition is expected until then.

"When we must compete against pervasive unfair pricing of this magnitude, no amount of product improvement, cost-cutting or streamlining can bring the [General Business Systems] division to the type of reasonable profitability" AT&T shareholders expect, said Gus Blanchard, group vice-president of AT&T's General Business Systems unit.

AT&T's General Business Systems products include the Spirit Communications System, the Merlin line of key systems and the System 25 digital PBX. Users of these products generally install between two and 80 telephone lines.

Analysts said the filing shows AT&T's get-tough attitude toward growing competition in major markets.

"This really illustrates their new aggressiveness in all of their markets," said David Boczar, an

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Packet firm to introduce control tool

By John Cox
Senior Editor

SAN JOSE, Calif. — McDonnell Douglas Network Systems Co. (MDNS) is scheduled to announce this week development of a network management system that unites a battery of the company's packet-switching network management products with those from several third parties.

The as yet unnamed product will enable customers to concurrently run and display multiple MDNS management applications and provide for a common network management data base. A graphical user interface will simplify use, and the displays and reports can be customized using a high-level procedural language.

The company's current private X.25 packet network customers use independent systems supporting MDNS network management applications to support separate management tasks. Much of this data is displayed in raw form as text or numbers, according to Curtis Johnson, network systems marketing manager for MDNS.

The new product integrates the company's network manage-

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NETLINE

N.Y. TEL WINS a $30m contract to build a voice net for some of the nation's biggest brokerages. Page 2.

AN ALBUQUERQUE BANK plans for the future with the installation of a microwave net to support its ATMs. Page 2.

US SPRINT PUTS the finishing touches on Fonline 800, a dial-up service for small and midsize users. Page 3.

COLLECTION AGENCIES exchange info over a national net in an effort to raise the number of reclaimed debts. Page 3.

HARVARD AND N.E. TEL wrap up their trial of a metropolitan-area net that boosted file transfer and E-mail speeds. Page 6.

WHAT CAN WE expect this year? *Network World* asks its readers to prophesy. Page 22.

NEWSPAPER

FEATURE

Building net budgets is a challenge, not a chore

A savvy budget presentation is the key to unlocking upper management's piggy bank.

By Carl Fleischer
Special to Network World

In these days of increasing costs and rising expectations for communications, preparing a budget can be a dreaded task. Competition is forcing management to find ways to do more with less. Every cost must be justified.

But new pressures should not be met with old assumptions. Take the case of an inexperienced manager about to embark on his first major budget process. He assumes that the budget just establishes a level of capital and operating expense with which he must live. He also thinks the objective is to get through the budget process as quickly as possible so he can return to the real work of the department, which is neglected during budget season.

Let's say our inexperienced manager gets clued in by a senior colleague that the budget is not an enemy but a friend. As a

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N.Y. Tel awarded contract to build securities network

Consortium of 16 brokerage houses predicts fiber net to save members $15m over five years.

By Laura DiDio
Senior Editor

NEW YORK — The Securities Industry Association (SIA) has awarded New York Telephone Co. a contract to build a Manhattan private network capable of handling voice — and eventually data and video traffic — for some of the nation's largest brokerage houses.

New York Telephone will build a 90M bit/sec fiber-optic ring linking two downtown Manhattan and two uptown central office switches. Roughly 200 participating SIA member sites will tap into the high-speed backbone using fiber links.

The network circuits will be multiplexed at DS0 (64K bit/sec) speeds, with the capability to offer DS1 (1.544M bit/sec) and DS3 (45M bit/sec) speeds.

The network will support roughly 11,000 point-to-point circuits linking brokerage firms to the American and New York stock exchanges as well as to other brokers and customers.

New York Telephone will manage the network from a single control facility, allowing SIA members to add circuits by instructing phone company technicians where to make changes. New York Telephone will be able to automatically reconfigure the network from a computer console rather than physically adding new lines.

When the SIA put out the call for proposals last January ("Broker group designs citywide private net," *NW*, Jan. 18, 1988), it estimated the new network would cut member private-line costs as much as 42%.

The securities group now estimates that its 16 participating members will save nearly $15 million in the first five years of operation, said Pim Goodbody, SIA vice-president of management services.

Although both parties declined to disclose the cost of the network, sources close to the project estimated SIA will sink approximately $30 million to $35 million into the fiber-optic net.

New York Telephone, a Nynex Corp. company, beat out five other vendors for the SIA network contract: IBM, Northern Telecom, Inc., New York Teleport, AT&T and Contel Corp.

"It was a close call, but the consensus among the SIA companies was to go with New York Telephone because it could implement the network the quickest

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Bank upgrades ATM net by switching to microwave

Leased-line replacement cheaper, more reliable.

By Bob Brown
Senior Writer

ALBUQUERQUE, N.M. — In an effort to cut costs and boost reliability, the First National Bank in Albuquerque is planning to replace the leased lines supporting its 60 automated teller machines with a microwave network.

The digital microwave network, which will cost roughly $4,500 per ATM site, will pay for itself in two years, according to Robert Joyner, the bank's senior vice-president and assistant director of information systems.

"There are a lot of good reasons to switch to microwave," Joyner said. "But cost savings are at the top of the list." Microwave is more reliable and easier to install than leased lines, he added.

First National Bank is already using microwave to link its headquarters with a mobile ATM. The transportable teller is built into the side of a modified recreational vehicle that is parked at events such as state fairs and sporting events.

The bank claims the vehicle is the country's first mobile ATM.

Although First National Bank is still waiting for the Federal Communications Commission microwave radio licenses it needs to link its 60 stationary ATMs, it plans to have the network in place by the end of the first quarter of this year. Some microwave equipment is already in place, Joyner added.

The current leased-line network consists of eight 2,400 bit/sec multidrop lines feeding an IBM System/88 fault-tolerant transaction-processing system used to support daily ATM transactions. At the end of each day, the System/88 uploads the ATM data to an IBM 4381 mainframe.

The microwave network, built using D Net 900E equipment from the San Carlos, Calif.-based Farinon Division of Harris Corp., will be point-to-multipoint and support data transmission speeds up to 9.6K bit/sec.

According to Joyner, each ATM will be equipped with a transmitter and antenna. Thus, the cutover simply involves unplugging the leased-line modem

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Briefs

Nynex hit with allegations. According to a recent article in *The Boston Globe*, Nynex Corp. has "skimmed millions of dollars in profits" from its New England Telephone Co. and New York Telephone Co. subsidiaries at the expense of customers. The article cites current and former Nynex employees who said Nynex's Materiel Enterprise Co. subsidiary has overcharged Nynex's two operating companies for everything from paper clips to computers. The report said the regional Bell holding company hid contract overcharges and signed sweetheart contracts in violation of state and federal laws as well as the divestiture Consent Decree.

Shortly after publication of the article, Nynex released a statement labeling the report "fundamentally inaccurate."

Chip chops capital investment. Cabletron Systems, Inc., which sells repeaters for local networks, recently unveiled plans to develop a new microprocessor that would let users directly connect computers to twisted-pair Ethernets. Users today need an attachment unit interface (AUI) to link devices to telephone wiring. If vendors adopt the Cabletron chip, users will be able to attach telephone wire directly to their Ethernet interfaces, eliminating the need for the $200 to $300 AUIs. Cabletron will ship the chip in March.

On hold. ACC Corp. announced recently that its merger negotiations with Rochester Telephone Corp. have reached an impasse over terms of the agreement. The company would not detail the stumbling blocks. On Dec. 5, ACC signed a nonbinding letter of intent to be acquired by Rochester Telephone. "At this time, I cannot predict whether or when negotiations with Rochester [Telephone] will resume," said Richard Aab, chairman and chief executive officer of ACC. Both ACC and Rochester Telephone are independent long-distance carriers based in Rochester, N.Y.

Card-carrying member. AT&T employees may soon need to use a smart card to access the company's computer network. Currently under trial, the AT&T smart card looks like a credit card but is actually a microprocessor laminated in plastic. The card has a data base that stores the equivalent of several pages of data about the user. Card readers scan the information for security clearance. Users may be denied or given access to the network depending on information programmed on the card.

E-mail specs fly. Members of the Aerospace Industries Association Information Technology Committee recently presented electronic mail suppliers with a list of requirements for E-mail products. The committee told representatives from General Electric Information Services, AT&T, Western Union Corp., IBM and Telenet Communications Corp. that they must use the International Standards Organization's X.400 standard, provide gateways from proprietary E-mail systems to X.400 products and ensure security within their offerings. By providing the vendors with product requirements, the aerospace group hopes to ensure interoperability among suppliers' E-mail nets and those of aerospace facilities.

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US Sprint ready to deliver new dial-up 800 service

Fonline 800, delayed due to additional testing, will serve small and midsize business users.

By Bob Brown
Senior Writer

KANSAS CITY, Mo. — US Sprint Communications Co. said its Fonline 800 service for small and midsize users will become available next week.

Fonline 800 was announced in January 1988 at the Communication Networks (ComNet) '88 show and was scheduled to be available during the second half of last year. However, additional testing of the service delayed its availability, a US Sprint spokesman said.

He added that another service — called Openline 800 — announced along with Fonline 800 at last January's ComNet show probably will not be offered as a separate service. Most likely, an Openline 800-like feature will be offered as part of Fonline 800, he said.

Openline 800 called for the use of 800 access lines. Fonline 800, which uses dial-up lines, is aimed at small and midsize business users that spend up to $6,000 a month on 800 service, according to US Sprint.

Fonline 800 offers savings of up to 13% compared with similar AT&T services such as its Readyline offering, US Sprint said. MCI Communications Corp. offers a similar 800 service called Businessline.

US Sprint has been training its sales force to offer Fonline 800 and has actually made the service available for beta testing in selected parts of the country.

In June, US Sprint introduced its Ultra 800 offering for customers that spend more than $6,000 a month.

> An Openline 800-like feature will likely be offered as part of Fonline 800.
>
> ▲▲▲

"We now offer an 800 product to meet the needs of any size business," said David Holland, US Sprint executive vice-president of sales and marketing.

Installation of Fonline 800 can be completed within five to 10 working days, US Sprint said. Users will be charged a $15-a-month service fee, and usage rates will be structured to provide increasing discounts as traffic increases, the company said.

Both US Sprint and MCI increasingly are looking to the 800 service market for new revenue, according to Robert Self, president of the New York-based research firm Market Dynamics and author of the long-distance rate guide *Long Distance for Less.*

Self said the carriers will have the most success with users that either do not have 800 services or are considering additional 800 numbers.

He said it is difficult for a user to transfer an 800 number from one carrier to another.

According to the US Sprint spokesman, the 800 market is estimated to total about $5 billion in 1989 and small-business services will make up a big chunk of that.

The small-to-midsize business market for 800 service grew eightfold last year, while the total 800 market grew by 18%, according to US Sprint.

"US Sprint's Fonline meets the needs of the fastest growing segment of the 800 market," Holland said.

"This is the hot area of the market right now," Self agreed. "[US Sprint] had to have a product here.

"There is no reason any business in the country that wants an 800 number can't have one," Self said. "Small [users] are able to do things they just weren't able to do up to now. It's a fabulous marketing tool."

Dial-up network helps bill collectors snare deadbeats

Agencies nationwide swap debtor information.

By Paul Desmond
Staff Writer

NEW ORLEANS — A collection company here has established a national dial-up network that its affiliates use to pool and distribute information on debtors, a strategy that is increasing the number of reclaimed debts.

About 30 independent collection agencies have agreed to swap account information over Adams, Baker & Doyle Holding Co.'s network.

Debts are distributed to the agency closest to the debtor, increasing the likelihood they will be fulfilled, according to Dennis Bain, chief executive officer at Adams, Baker & Doyle.

So far, the strategy has increased the number of successful bill collections by roughly 6%, a hefty increase given that the previous success rate was about 29%, Bain said.

Debtors typically respond to payment requests from local companies before they reply to requests from distant agencies because the local firm is more likely to take them to court, Bain said. In addition, a local agent can visit a debtor to determine if it has assets that can be seized or if the collection process would be fruitless.

When establishing branches, Adams, Baker & Doyle looks for a company that dominates the business in its area but lacks the means to collect debts outside its territory, Bain said.

Each independent agency that signs on must form a new separate company under the Adams, Baker & Doyle name. This gives the company nationwide uniformity and facilitates marketing. All commercial or business-to-business accounts are handled by the Adams, Baker & Doyle affiliates, while the retail or personal debt side of the business is kept by the original agency, Bain said.

In each Adams, Baker & Doyle branch, the holding company installs an IBM Personal System/2 outfitted with a special collection agency program and communications software, according to W. Kellogg Achenbach, a company vice-president responsible for network operations.

All commercial account data is entered into the Personal System/2, which is equipped with an internal Hayes Microcomputer Products, Inc. 2,400 bit/sec modem, Achenbach said.

At night, an IBM System/36 minicomputer in the holding company's headquarters here polls the Personal System/2s and separates debts that have yet to be collected from those in progress and those that have been closed. The minicomputer then routes accounts to the appropriate agency — either the branch that originally posted the item or the branch that will attempt collection.

The debts are distributed according to the first three digits of the debtor company's zip code, Achenbach said. In the morning, each branch operator taps into the newly updated data base.

After an account is successfully collected, the proceeds are divided among the three participants in the collection process. The branch that posted the debt and the branch that collected it each get 40%, while the holding company receives the remaining 20%, Achenbach said.

Besides bettering Adams, Baker & Doyle's business, the network has enabled each branch — many of which were strictly retail collection agencies — to expand into the commercial collection market, creating a new source of revenue.

For a monthly fee of less than $300, which covers a lease on the Personal System/2 and all the software, each company can tell its clients that it will have an agent knocking on the debtor's door within 24 hours, Achenbach said.

Branch operators agreed the network helps them sell their service.

"You hate to promise a client something and not be able to deliver," said Ray Robertson, president of the holding company's Chicago-area branch in Waukegan, Ill. "Now we can deliver."

Robertson's office helped test the system when it became the second to come on-line with Adams, Baker & Doyle in June of last year. The office started collecting debts in August, he said. Although no revenue figures are available yet, he said the venture has been a success.

"From the business standpoint of servicing my clients, it's extremely successful," Robert-

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Stores' POS nets handle blizzard of gift returns

By Jim Brown
New Products Editor

Although throngs of customers descended upon their stores with loads of gifts to return, retailers said there was little they needed to do to prepare point-of-sale nets to handle the onslaught of transactions on Dec. 26.

The major effort, POS managers said, involved reconfiguring in-store electronic POS terminals to handle returns. Network capacity, they said, is not an issue since the networks are designed to handle the highest transaction volume day, which is typically the day after Thanksgiving, when the Christmas shopping season begins.

However, Los Angeles-based Bullock's department store said its POS network is designed to support its customary traffic peak on Dec. 26, when it processes 60% more transactions than it does on the day after Thanksgiving.

"We really don't worry about the day after Thanksgiving, but we do worry about the day after Christmas," said Scott Hays, POS manager for Bullock's.

To speed transaction processing, all stores urge customers to bring a sales receipt or price ticket along with the item being returned. This receipt or ticket contains a stock keeping unit (SKU) number, which clerks enter on POS terminals and transmit via the network to a host containing a price and inventory file.

The SKU helps the store determine whether the product was purchased there and updates the inventory record for that item. While a receipt determines the actual refund due a customer, a SKU helps the store determine a refund price for a customer without a receipt.

If there are no SKUs available, clerks must try to match the item being returned with one in stock. This is typically done off-line, managers said.

To reduce POS transactions on Dec. 26, Bullock's abandons its two-stage return policy in its 32 stores throughout Southern California, Arizona and Nevada. Typically, customers must bring an item to the department where it was purchased. A clerk in that department takes the item and gives the customer a credit slip, which is turned in at the store credit office for cash.

This approach requires two transactions. The first, performed in the department, involves collecting merchandise information used to update inventory records. In the second transaction, the financial data used for accounting purposes is obtained at the credit department. The two-stage approach makes it easier for registers to balance at the end of a day.

"We don't want to make customers do that with the volume of returns we have the day after Christmas," Hays said. So Bullock's dedicates terminals in each store to support a single transaction return and refund. This requires modifications to the company's Amdahl Corp. mainframe software.

Hays said Bullock's is replacing its 15-year-old POS network based on American Regitel, Inc. equipment with a Fujitsu America, Inc. 7770-based POS net. He said the store began testing the Fujitsu equipment, which supports single-transaction returns without host software modifications, in one of its largest stores Dec. 26.

The existing American Regitel-based net includes terminals that communicate with each store's IBM Series/1 minicomputer. Those Series/1s are linked to the Amdahl host in the store's Los Angeles data center via leased lines operating at 4.8K

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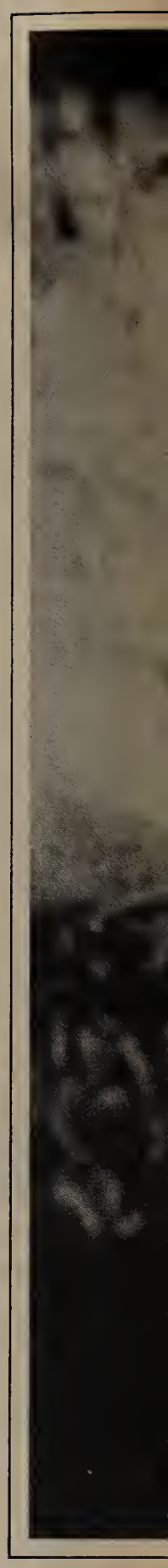
Corrections: Due to incorrect information in a press release, our story "Users, carriers christen first undersea fiber cable" (Dec. 19) reported that ITT World Communications, Inc. is a partial owner of the TAT-8 undersea fiber-optic cable. A former unit of ITT, Worldcom International Private Line Services, owns 8.2% of the cable. Worldcom is now owned by Tele-Columbus AG, a communications provider based in Switzerland.

Also, the names of Apple Computer, Inc. and Corvus Systems, Inc. were inadvertently switched in the Industry Update graphic "LAN spending trends" (Dec. 19).

"The only time I got bad modems from AT&T, they had fallen off the truck."

—Cal Tuggle, President, Atlanta Datacom
Authorized AT&T Reseller



"And then, as luck would have it, the truck backed over them.

I guess that's what it takes to break AT&T **DATAPHONE® II** modems. Otherwise, they are the most reliable I've seen and as a value added reseller, I've seen a lot of them. AT&T doesn't cut corners. Their stuff is made to work and work, and I'm talking about the real world here. I've seen AT&T modems stacked on the floor and kicked around, but

I never got complaints about quality or reliability.

They have an average mean time to failure rate of 12 years. That is if a truck doesn't hit them. Not to mention you're getting support for that equipment in maintenance, troubleshooting, you name it.

Hey, I don't have to sell AT&T data communications equipment. As a VAR, I can sell any company's equipment. But in this business, if you sell a product your customers aren't happy with, you're not going to stay in business too long. So I only sell AT&T modems and data service units. And business has been very good indeed."

For more information about AT&T **DATAPHONE II** data communications equipment, see your AT&T Account Executive, your authorized AT&T Reseller, or call **1 800 247-1212, ext. 764.** In Canada, call **1 800 387-6100.**

AT&T

The right choice.

Harvard, N.E. Tel connect E-nets via central office

Scheme gives school reliable 10M bit/sec net.

By John Cox
Senior Editor

CAMBRIDGE, Mass. — Harvard University and New England Telephone Co. recently concluded an 18-month experiment using a central office switch to link dispersed Ethernet local nets.

The metropolitan-area network trial provided a reliable, 10M bit/sec link among four sites and replaced low-speed leased lines. The network increased file transfer speeds, improved the efficiency of electronic mail and gave users at three outlying sites either faster or first-time access to campus network resources, according to Harvard net managers.

"It was an innovative service [to connect] the really outlying areas," said Charles Maxson, systems analyst at the Harvard-Smithsonian Center for Astrophysics, one of the metropolitan-area network sites. "There was no other way to do that at the time in a reasonably priced way."

The sites chosen for the Harvard metropolitan net test were the Department of Psychology's Computer Based Laboratory on the main campus in Cambridge; the nearby Center for Astrophysics; and two Boston locations: the Health Sciences Computing Facility at the Harvard School of Public Health and the Cardiac Computation Center at Massachusetts General Hospital.

Prior to the metropolitan net project, these outlying locations used low-speed leased telephone lines to access the main campus net. The Cardiac Computation Center did not have a direct link.

The telephone lines allowed restricted file transfers and slow store-and-forward E-mail messaging. The metro net pilot promised the ability to link the local nets at these locations, creating, in effect, one large local network.

New England Telephone installed a router from Proteon, Inc. of Westborough, Mass., on the Ethernet at each site. Each router, running specialized Transmission Control Protocol/Internet Protocol routing software, was outfitted with a single-mode fiber cable port to support fiber that New England Telephone installed for the project.

The routers were supported by three different central office switches, which were in turn linked by fiber. The Cambridge central office was the network hub. The carrier's Facility Maintenance Administration Center in Boston was used to monitor the metro net remotely.

Because the metro net was a trial project and would eventually be dismantled, it was not used for major applications. As a result, the connection was used mainly for E-mail, file transfers and access to nationwide networks such as Internet — a group of nets linking universities and defense and scientific research facilities.

The Health Sciences Computing Facility was originally linked to the main campus via a 1,200 bit/sec leased line. The facility is a heavy user of the E-mail facility on Internet. But the mail was slow and interactive exchanges were impossible, said Mohamed Ellozy, senior programmer/analyst at the facility.

The metropolitan net "gave us instantaneous mail access to the outside world," he said.

At Massachusetts General, the metro-area net provided the Cardiac Computation Center's first-ever connection to the Internet gateway at Harvard. The result was a steady rise in E-mail traffic by Massachusetts General users seeking access to bulletin boards and research data, said David Murphy, a Harvard network manager stationed at the hospital.

Low-speed phone lines are the transmission media for most existing E-mail systems and are relatively easy to install, Murphy said, but a high-bandwidth metro net offers a much more efficient means of data sharing.

Network users, with proper authorization, can access data anywhere on the net as easily as they can on their local net. Radiographic imaging data stored at one site can be accessed by and shared with multiple sites to plan radiation treatments, an exchange not feasible with an E-mail connection, he said.

Similarly, the metro net's high bandwidth allowed the Center for Astrophysics to conduct large file transfers and extensive system software updates much faster than before, said Maxson.

One drawback was that the network supported only TCP/IP networks, a problem for sites with more than one network protocol. "You had to communicate with TCP/IP," said Bradner. "If you had it, you could do a file transfer, either remotely or locally, and see no difference."

At Massachusetts General, for example, research computers are generally Digital Equipment Corp. VAXes running the VMS operating system and DECnet network software. These machines could not use the metro-area net to access VAXes at Harvard unless the hospital bought TCP/IP software, Murphy said.

With the metropolitan-area network pilot ending, all three remote sites have already forged replacement connections or are in the process of doing so. The Center for Astrophysics now has a fiber link to the campus. The Health Sciences Computing Facility is using half of a T-1 connection. Massachusetts General has just completed installing a private microwave connection that will support both DECnet and TCP/IP and other protocols.

RBHC plans

The regional Bell holding companies are initially positioning metro-area nets, which will be built using high-speed switches and fiber connections, as a way of linking local networks at different customer sites.

The metro net concept could potentially lead to local network-to-local network connections being made like voice connections, according to Scott Bradner, technical associate at the Computer Based Laboratory. But the carriers, at least for now, seem to be talking about metro nets as a custom networking service offered privately to individual companies or institutions, he said.

Even that service may not materialize unless the carriers can figure out how to make it competitive with microwave, according to Murphy. A point-to-point private microwave link costs about $50,000, which is economical when compared with monthly T-1 fees or the likely cost of high-bandwidth metro nets. "How they'll cost-justify it to make it competitive with microwave is beyond me," he said. "I don't see how they can do it."

> The concept could lead to local net-to-local net connections being made like voice connections.
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Firm unveils net control tool

continued from page 1

ment applications with a Sun Microsystems, Inc. Unix workstation or, in larger networks, with a networked Sun server with more memory and greater processing power.

Management applications

The Sun workstation incorporates Sybase, Inc.'s relational data base management system, which is used to maintain data imported by the various net management applications.

These applications were developed by MDNS to manage its Tymnet public packet network. The applications support functions such as network monitoring and control, accounting, performance and utilization, automated trouble ticket reporting, configuration management and planning, Curtis said.

Today, MDNS customers with private X.25 packet networks can only access management data about switch nodes.

The new system will enable managers to access information about switch components as well as systems attached to the node and network software.

Windowing software and a system of menus and graphics will be used to display data in easy-to-read form, he said. The data base will enable network operators to call up an array of standard reports or use a query facility to create ad hoc reports.

Shortlist of suppliers

Because MDNS private networks typically incorporate third-party products such as modems, the company will integrate the proprietary network management systems of a shortlist of recommended suppliers, Curtis explained.

If a customer decides to go with a different third-party supplier, the MDNS management system will supply what Curtis called a "reach-through" capability. An operator at the MDNS workstation will be able to call up a window that will access the other vendor's management system. That system can then be viewed by the operator as if he were using that vendor's own display, according to Curtis.

Interface to NetView

The new system will incorporate MDNS' TymView product, an interface to IBM's NetView/PC, to pass alarm and status information to a host NetView program, Curtis said.

The new management system will be available by the end of the year. Johnson said the company announced the product now so customers and prospects could begin to plan future network changes with its capabilities in mind.

Public, private links

Field tests will start by the end of March. The system can be used in existing as well as new MDNS networks, even if the nets include both public and private connections.

Pricing is uncertain, but a company spokeswoman said the integrated management system typically would be 10% to 20% of the total cost of the network.

MDNS is located at 2560 N. First St., P.O. Box 49019, San Jose, Calif. 95161; or call (408) 446-6000.

Network helps bill collectors

continued from page 3

son said. "Our recovery rate on the commercial side runs around 40%, which is extremely high."

Paul Hartman, the director of the Hagerstown, Md., branch, said Adams, Baker & Doyle not only gave him the opportunity to expand into commercial collections but also helped his retail business.

Some of his commercial clients have come to Hartman to collect debts from individuals in the Hagerstown area, which he does through his retail collection company, Valley Credit Service, Inc.

Expansion plans

Achenbach and Bain said they plan to add more offices until they can blanket the country. Currently, the company covers about 80% of the territory east of the Mississippi River, plus most of Texas, Kansas, Arkansas and Louisiana, he said.

Another 14 offices should be on-line by February, and a total of 50 are expected by the end of the first quarter of 1989, Bain said. He estimated it would take between 90 and 120 offices to cover the country.

"When there's enough network offices across the country, and maybe internationally, it's going to be the IBM or the General Motors of the commercial collection business," said Robertson.

IEEE sets up study group for hub mgmt. standards

By Laura DiDio
Senior Editor

BOXBOROUGH, Mass. — The IEEE 802.3 Ethernet committee recently established a study group to look into developing standards for hub management products.

Two vendors, Interlan, Inc. and BICC Data Networks, Inc., had been lobbying for the Institute of Electrical and Electronics Engineers to set up such a standards task force.

The group, which will hold its first meeting in Orlando, Fla., from Feb. 1 to 3, will look into developing a standard for network hub devices. These devices include active star hubs, multiport repeaters and wiring concentrators.

"As these devices have grown in popularity, the variations on their implementations have also grown commensurately," said Joseph Skorupa, director of product planning at Interlan. "The result is a lot of confusion in the industry."

Skorupa will chair the study group and intends to propose a management performance specification that follows IEEE guidelines. He could not say when the group will propose such a specification.

For further information, contact Skorupa at Interlan at (617) 263-9929.

Worth Noting

The price cap plan "is too important a matter to flounder, and time is too precious to squander, so let's vote on it once and for all."

John Clendenin
Chairman and
chief executive officer
BellSouth Corp.
Atlanta

People & Positions

C&P Telephone Companies recently appointed **C. Hyde Tucker** vice-president and chief operating officer. Tucker succeeds **Walter Daron**, who is retiring, the company said.

Tucker most recently was a vice-president of Bell Atlantic Corp., the parent company of C&P Telephone. In his new position, Tucker will be responsible for the planning, engineering, maintenance and modernization of the telecommunications network in C&P Telephone's operating areas, which include Maryland, Virginia, West Virginia and Washington, D.C.

Infonet, a jointly owned venture of Computer Sciences Corp. and several post, telegraph and telephone administrations in Europe, recently expanded its international management team.

Infonet, an El Segundo, Calif.-based international data communications network provider, appointed **Michael Timmins** vice-president of international operations and **Tom Whidden** director of European operations.

Timmins, previously director of European operations, will assume the added responsibility of international business development.

Whidden will be responsible for the company's international value-added network services. He will coordinate communications between Infonet's network operations, European offices and the PTTs. Previously, Whidden was director of net services.

Retix buys TSL, prepares for 1992 European mart

OSI software vendor acquires switch maker.

By Laura DiDio
Senior Editor

SANTA MONICA, Calif. — In a move to strengthen its presence in the European market and broaden its internetwork product portfolio, Retix recently acquired TSL Communications of Guilford, England.

The acquisition appears to be a synergistic match for both firms and will give Retix a presence in the 1992 European open market. By that time, all trade barriers between European Common Market countries will be removed, opening up the market for Retix.

Financial terms of the acquisition were not disclosed.

Retix, founded in 1985 and headquartered here, has annual revenue of about $19 million. Retix makes Open Systems Interconnection software products and local net Ethernet bridges. TSL Communications, with 45 employees and yearly sales of about $6 million, markets X.25 wide-area network packet switches, Transmission Control Protocol/Internet Protocol servers and local net bridges.

TSL Communications will be renamed Retix Systems and will function as an autonomous business unit, according to Andy De Mari, Retix chairman and chief executive officer.

The two companies laid the groundwork for the acquisition as early as January 1988. At that time, Retix and TSL Communications began jointly planning and developing the RetixGate 2000 Series local net bridges and TSL Communications remote bridges equipped with OSI network management features. Those products are slated to ship in the first quarter of this year, according to a Retix spokesman.

The spokesman also said that Paul Whitehouse, who served as managing director of TSL Communications, will retain that title at the newly named company.

Retix Systems will coordinate its activities with those of Retix Ireland, an OSI research and development center in Dublin, as well as with Retix's European sales and support offices.

INDUSTRY BRIEFS

GTE Telecom, a subsidiary of Stamford, Conn.-based **GTE Corp.,** recently said it is tuning up to provide telecommunications services for Super Bowl XXIII, which will be held on Jan. 22 in Miami. This year's Super Bowl will be the fifth straight that GTE Telecom has handled.

GTE Telecom will provide its SportsLink telecommunications system at the stadium. GTE Telecom technicians will install more than 500 telephones, five switching consoles and 10 miles of cable throughout the stadium, as well as at five hotels and other sites in south Florida.

US Sprint Communications Co., a subcontractor, will provide a fiber-optic data link from the Miami hotel where National Football League officials will stay to the league office in New York.

Fujitsu Imaging Systems of America, Inc. recently entered into a cooperative sales and marketing agreement with **MCI Communications Corp.** Fujitsu Imaging Systems has agreed to introduce its new facsimile machine customers to the benefits of MCI's new MCI Fax service, which allows customers to send facsimiles via electronic mail or telex.

Fujitsu Imaging Systems, which is based in Danbury, Conn., sells the dex line of facsimile machines.

Financial terms of the agreement were not disclosed.

Bell Atlantic International, Inc., in a systems integration agreement with **IBM New Zealand,** will work to implement a computerized directory assistance system for **Telecom Corp. of New Zealand.** Under the terms of the agreement, IBM New Zealand will provide the New Zealand telecommunications company with its Information Service System, while Bell Atlantic International will install and support the system, and provide training for directory service operators.

The directory assistance system is designed to give telephone users a fast, up-to-date and accurate New Zealand directory

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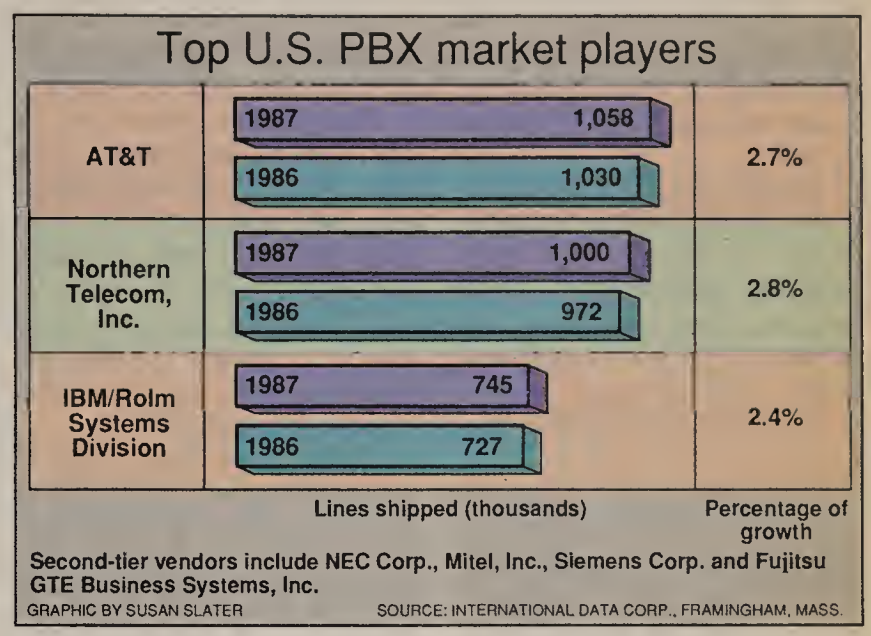

Second-tier vendors include NEC Corp., Mitel, Inc., Siemens Corp. and Fujitsu GTE Business Systems, Inc.

GRAPHIC BY SUSAN SLATER SOURCE: INTERNATIONAL DATA CORP., FRAMINGHAM, MASS.

IBM/Siemens pact may aid PBX rivals

Users, confused by instability of Rolm, could be swayed by firms such as AT&T, Northern Tel.

By Bob Brown
Senior Writer

SANTA CLARA, Calif. — The recent teaming of IBM and Siemens AG opens a window of opportunity for other firms in the crowded and highly competitive private branch exchange market, according to vendors and analysts.

Confusion over IBM/Siemens' strategy in the short term may force Rolm PBX and voice mail users to look to other vendors for products, they said.

But PBX makers may face problems three to five years down the road if IBM and Siemens can successfully merge their overlapping products and distribution channels. With Siemens' impressive PBX technology and IBM's large U.S. customer base, the two companies could be stronger together than they are separately, analysts said.

"It's a wait-and-see situation," said Dick Kuehn, president of RAK Associates, a Cleveland-based communications consulting firm. "Rolm has good products and knowledgeable people. Siemens should be able to maintain Rolm's market share."

But, Kuehn said, "AT&T and Northern Telecom salesmen can't sell anything if they can't sell the instability of Rolm."

Last month, IBM said it will sell its Rolm product development and manufacturing facilities to Siemens, which created a new unit called Rolm Systems, Inc. to oversee those operations ("IBM, Siemens carve up Rolm operations," *NW*, Dec. 19).

IBM and Siemens will share marketing and service responsibilities for Rolm Systems equipment through a new joint venture named Rolm. This group will also provide support for current Rolm customers.

A spokeswoman for AT&T, the top vendor in the U.S. PBX market, predicted it "is going to take IBM and Siemens some time to sort out their products and define a migration strategy for users." This spells good news for AT&T, she said, adding, "A confused Rolm customer is a great AT&T prospect."

Northern Telecom declined extensive comment on the IBM/Siemens agreement, but a company spokesman did say, "Wise customers will always look to alternatives when something like this happens."

"A confused Rolm customer is a great AT&T prospect," said an AT&T spokeswoman.

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David Weinstein, director of marketing at Centigram Corp., a San Jose, Calif.-based voice mail company, said that given the competitiveness of the PBX market, the IBM/Siemens agreement "has clearly got to be enough to swing some users toward other vendors."

Down the road

In the future, Siemens may add long-awaited Integrated Services Digital Network capabilities to Rolm switches, as the giant West German telecommunications firm has done in Europe with its line of Hicom switches, analysts said.

"I think IBM thought this out pretty carefully," said Frank Mur-

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IBM/Siemens pact may aid rivals

continued from page 7

awski, president of FTM Consulting in New Hyde Park, N.Y. "IBM will still be a partner in new developments. I think Rolm customers will still have IBM behind them."

But ISDN integration is unlikely considering the different architecture of Siemens and Rolm switches, according to David Bearden, division manager for premises product marketing within the Communications Systems Division at AT&T in Bridgewater, N.J.

"I'm not sure the announcement furthers the implementation of ISDN into Rolm switches," Bearden said. AT&T announced ISDN capabilities for its System 85 switch in February 1987, he said.

Trouble for NEC

The IBM/Siemens agreement could spell trouble for NEC America, Inc., which relies on Tel Plus Communications, Inc., a Siemens Corp. subsidiary, to distribute many of its switches in the U.S. NEC's general distribution agreement with Tel Plus runs until March 31, 1990, and many observers doubt that the contract will be renewed.

"[Siemens] had given us advance warning of what they wanted to do," said Tony DiMaso, national distribution director for NEC America. "[Our first reaction was] 'What does that mean for us?' It's not something we want to see, but it's not something that will turn us upside down."

Tel Plus is one of NEC's top five distributors. The switch maker's products are also distributed through Universal Communications Systems, GTE Corp. and five regional Bell holding companies. About 98% of NEC's PBX sales are conducted through distributors, and the rest, mostly in California and Nevada, are direct.

"[Tel Plus] will be our flagship distributor for the foreseeable future," Dimaso said.

Because of confusion over the IBM/Siemens agreement, some Rolm PBX customers are expected to look to vendors other than Rolm for voice mail products, too, analysts said.

"The worst situation in acquisitions is always people not knowing what is going on," Centigram's Weinstein said.

"By and large, the impact of the IBM/Siemens deal will be minimal on the voice mail market," he said. "The only possible impact is that in the near term, people with Rolm switches will more seriously consider vendors other than Rolm for voice mail or other peripheral products."

Pat Howard, president of VMX, Inc., the San Jose, Calif.-based voice mail company that acquired OPCOM late last year, agreed with Weinstein that there can be little negative impact from the IBM/Siemens agreement as far as his company is concerned.

The agreement gives Siemens a stronger U.S. presence via the installed Rolm base and could increase sales of Siemens switches here. That could mean increased sales of VMX products that work with Siemens switches, Howard said.

The agreement could also increase the popularity of Siemens switches in Europe, where IBM will also market them.

The only problem Howard foresees is the further slowdown of a PBX market that already is expected to stay flat over the next two years, according to a recent report by the North American Telecommunications Association ("Datacom sales predicted to carry net equipment mart," *NW*, Dec. 12).

The IBM/Siemens announcement will have little impact on most voice mail vendors, agreed Kuehn of RAK Associates. But Octel Communications Corp. could be faced with a problem if Tel Plus, which distributes its voice mail products, is folded into the newly formed Rolm marketing group, Kuehn said. Like NEC, Octel could be dumped by Tel Plus, especially since a new version of Rolm PhoneMail is expected to be introduced sometime this year at a far more competitive price than previous versions, Kuehn said.

Industry Briefs

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service by providing operators with on-line terminal access to directory information.

Bell Atlantic International is a subsidiary of Bell Atlantic Corp., the Philadelphia-based regional Bell holding company. IBM New Zealand is a subsidiary of IBM.

Plessey-Telenet, B.V., the Dutch subsidiary of **Plessey-Telenet, Ltd.,** recently was awarded a contract to install the first phase of a national data net for the Dutch police. The initial value of the contract is $3.7 million.

The network, which is expected to be operational early this year, will be installed in two major phases. The first phase calls for installing the network backbone, and the second phase concerns connecting the network to all 23 police regions in the Netherlands as well as the 600 offices they cover. Phase 2 is expected to take three years to implement.

The network is expected to improve police efficiency.

Plessey-Telenet, Ltd. is a UK-based joint venture of Telenet Communications Corp. and Plessey Co. plc.

Computer scientists warn against ISDN 'police state'

Researchers say technology disregards people.

International News Service

HAMBURG, West Germany — Computer researchers meeting here recently warned that implementation of Integrated Services Digital Network could represent a step toward an "Orwellian police state."

About 450 specialists, gathered for a three-day meeting of the Computer Scientists' Forum for Peace and Social Responsibility, expressed concern that public issues are largely ignored when technology is implemented.

They singled out the introduction of ISDN as one example, arguing that the public should be informed of the technical requirements for ISDN and its consequences.

According to the group, creating technology oriented to human needs requires changes in thinking, in research and development, and in the production and application of information technologies. The meeting was chaired by computer scientist Joseph Weizenbaum.

Eliminating jobs

The major criticism of the computer scientists centered on ISDN as an economic weapon that, by increasing efficiency, could be used to wipe out jobs. "With ISDN," the forum concluded, "a crucial prerequisite for the Orwellian police state has been created."

Attendees criticized the lack of social consensus surrounding West Germany's nascent country-wide ISDN network. Although it will affect almost everyone living in West Germany, planning and development of the network has happened without the involvement of state governments or the national parliament, they said.

The association said it will attempt to inform the public of its conclusions and seek an alternative to ISDN.

World under a microscope

For three days, the scientists put the world under a microscope, taking part in a total of 11 workshops with titles such as "New Forms of Work Organization and Work Division," "Isolation of Information Science Engineers" and "Computer Science in Schools." They also analyzed the dangers of the misuse of information technology.

Other issues discussed at the convention were the interweaving of military and civilian interests in R&D, and production and its effect on the function and quality of products.

A customer cashes in at a First National Bank mobile ATM built into the side of a recreational vehicle.

Bank switches to microwave

continued from page 2

and plugging in the microwave set. For security purposes, the microwave transmissions will be encrypted.

The central microwave transmitter is located on top of the bank's headquarters. A repeater on a neighboring 18-story building can transmit up to 20 miles in any direction, Joyner said. The bank has a spare central transmitter that can be hooked up at a backup site in the event of a disaster.

Lobbying efforts

First National is lobbying the FCC to approve two frequencies to support future ATM network capacity, Joyner said. Eventually, the bank would also like to use microwave to support data communications to its branches, but it would need still more frequencies, he added.

The bank might have opted to use microwave in its ATM network sooner but the technology has only begun to mature in the past year, Joyner said.

Although still not common, according to Alan Walker, director of government and industrial relations at Farinon, an increasing number of banks are beginning to use microwave to support ATMs. The FCC is considering loosening the restrictions on the radio frequencies needed to operate such networks, he said.

> An increasing number of banks are beginning to use microwave to support ATMs.
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The frequencies that First National wants to use have been used almost exclusively by power companies to date and are not available in many major cities, Walker added.

While Farinon said other customers have tied ATMs into their networks using microwave, the New Mexico bank is the first to do so with a mobile money machine.

The roving ATM sports a 12-foot-high mast antenna that assures clear signal transmission and reception.

The mobile ATM was used last fall at the Albuquerque International Balloon Fiesta, an event at which an estimated 2,000 spectators were limited largely to cash-only purchases from the nearly 200 vendors of food and souvenir items on hand.

> "The mobile ATM is a very visible advertising vehicle," said the First National Bank's Joyner.
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The bank is trying to get exclusive rights to provide ATM services at several events, including rodeos and fairs. Because First National Bank belongs to several ATM networks, including Cirrus, the mobile ATM can be accessed by a large number of consumers.

"The mobile ATM is a very visible advertising vehicle," Joyner said. "I could see other banks following us."

To help prevent theft, a mobile telephone has been installed in the vehicle so the driver can call for help. Tampering with the ATM triggers alarms and disables the vehicle.

While red tape slowed down the process of obtaining an FCC license to bring the mobile ATM to shopping malls during the current holiday season, the bank hopes to be ready to serve cash-hungry Christmas shoppers in 1989.

Customers, however, cannot flag down First National Bank's recreational vehicle on any street corner for quick cash. The vehicle is driven to a single, prearranged site, where it is then loaded with cash by Wells Fargo & Co. agents, and it is unloaded prior to leaving that spot.

Worth Noting

"Fiber-optic cable is subject to 'backhoe fade.' "

David Link
Vice-president of network engineering
MCI Communications Corp.
McLean, Va.

Carrier Watch

Illinois Bell Telephone Co. recently submitted a pricing proposal to the Illinois Commerce Commission (ICC) that would lower monthly telephone bills for business customers and slightly increase monthly bills for residential customers.

Illinois Bell proposed to reduce rates annually by about $35 million. The planned changes reflect savings accrued by Illinois Bell as a result of the Tax Reform Act of 1986, as well as other expense and revenue changes.

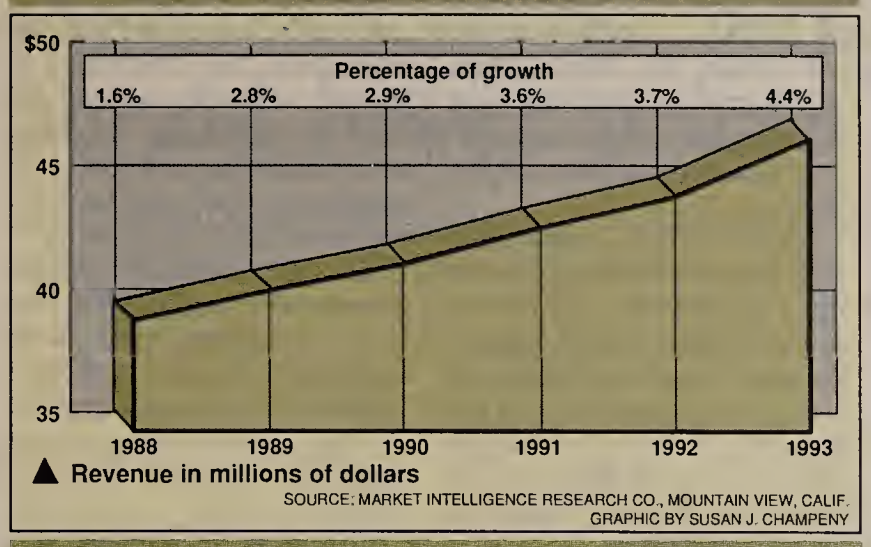
In addition, the carrier proposed a change in its allowable rate of return, currently 15.85%. Under its proposal, Illinois Bell would be allowed greater profits but would evenly share any earnings above 15% with customers.

Illinois Bell would also agree not to seek an increase in basic service rates before 1992 unless earnings fell below 13%.

The proposal also calls for:

- Business customers to receive volume discounts up to 50%, which more than doubles the current 23% maximum discounts.
- Monthly access-line charges for residential customers in northeastern Illinois, except in downtown Chicago, to increase by $1.03. The proposal calls for monthly access charges for residential customers in the rest of the state to increase by $3 over the next three years.
- Price reductions of up to 40% for northeastern Illinois customers who make calls more than 40 miles away to communities served by Illinois Bell.
- Calls made on Saturdays to be discounted 33%. A separate proposal before the ICC would extend similar discounts to calls made on Sundays.

Projected long-distance service growth



SOURCE: MARKET INTELLIGENCE RESEARCH CO., MOUNTAIN VIEW, CALIF.
GRAPHIC BY SUSAN J. CHAMPENY

Toshiba America launches switching system rentals

Program features PBXs, key systems, voice mail.

By Bob Wallace
Senior Editor

IRVINE, Calif. — Bowing to pressure from its 215 dealers, Toshiba America, Inc.'s Telecommunication Systems Division (TSD) recently created a rental program for its private branch exchanges, key telephone systems and voice mail system.

The Telecommunications Rental Program is designed for users with limited credit that cannot justify buying or leasing a PBX or key system.

The rental program covers Toshiba's Strata analog key system line, its Perception and Perception II digital PBXs, and its Intouch stand-alone voice mail system.

"We see this rental program as an aggressive way to win business."

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Users can rent the products on a monthly basis for one to five years. The company is offering a renewal incentive that can reduce the monthly rental charge by up to 25%. Charges vary based on the type of telephone system rented and system configuration.

"We know that the [PBX and key system] market is flat. We see this rental program as an aggressive way to win business," said Steve Paddock, marketing manager for TSD.

For more than two years, TSD dealers have pressed the switch maker to introduce a rental program, Paddock said.

"Our research shows that as many as 20% of [all] users currently rent their [switching system] or want to do so," said Paul Wexler, TSD's vice-president and general manager.

Under the rental program, users select the term of the agreement and submit a credit application — along with a check for the first month's rent — to a Toshiba dealer. The rental period begins when the telephone system is installed and brought on-line.

Users wishing to drop the product must submit a written notice of cancellation prior to the renewal deadline. Otherwise, at the end of the contract term, the agreement will be renewed for 12 months at the current monthly rate.

Paddock said users that choose not to renew their rental contract must pay a flat, per-station removal fee, but he declined to disclose that fee.

Users opting to buy their switching system during the rental period will have a portion of the rent credited toward the purchase, Paddock said. This amount varies depending on the length of the rental agreement.

Under the rental program, TSD authorized dealers handle system design programming, installation, cutover, maintenance and user training, Paddock said.

If a user adds new equipment to the existing Toshiba switch, the cost of the equipment and the related installation charges are divided into the remaining months of the agreement.

If, for example, a user with a 12-month rental agreement chooses to add voice mail to the switch midway through the contract, the cost of the hardware, software and installation fees would be divided equally into the remaining six monthly payments.

Paddock hopes the new switch rental program is as popular as Toshiba's PBXs and key systems.

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Voice response stirs interest from banks

Systems let customers with push-button phones get account balances, transfer funds, pay bills.

By Jim Brown
New Products Editor

NASHVILLE — Interest in voice-response systems is growing rapidly in the banking industry, according to preliminary findings of a Bank Administration Institute (BAI) study released at the group's recent Retail Delivery Systems Conference, dubbed ATM11, held here.

The BAI study, "A Banker's Guide to Voice Response Systems," found that nearly half of the 127 banks surveyed said they are considering voice-response systems, while one-third said they have systems installed. Of the banks that have voice-response systems, 60% said they installed them within the last two years.

With voice-response systems, bank customers can call in to acquire account-balance information, transfer funds between accounts and pay bills. A typical system consists of a stand-alone voice processor running custom software linked to the bank's computer and phone systems.

Customers calling into the voice-response system are greeted with a prerecorded message that lists several options. The message then asks callers to use their push-button phone to enter the digit that corresponds to the option they want. Callers are asked to enter account numbers and personal identification numbers before transactions are completed.

Voice-response systems record data entered from the telephone and use a text-to-speech process to convert the data representing an account balance to digitized speech, which the caller hears.

In the study, bankers said that allowing customers to access account balances was the primary function of voice-response systems. Enabling customers to transfer money between accounts and to pay bills were secondary functions.

Bankers also said the benefits

(continued on page 10)

WASHINGTON UPDATE

BY ANITA TAFF

FTS 2000 loser satisfied. Martin Marietta Corp. two weeks ago met with officials of the U.S. General Services Administration to discuss why the company was not awarded a portion of the Federal Telecommunications System (FTS) 2000 contract.

Martin Marietta bid for FTS 2000 as a prime contractor on a team that included MCI Communications Corp. The GSA awarded portions of the contract to AT&T and US Sprint Communications Co.

A Martin Marietta spokesman declined to discuss details of the meeting but said the company was satisfied with what it learned.

In a prepared statement, Martin Marietta said it did not want to delay the procurement and that it had no immediate plans to protest the award.

In a statement issued immediately after the Dec. 8 contract award, MCI vowed to oppose the contract through the FCC or the courts if it thought AT&T had priced services in a predatory manner. A challenge would likely come in the form of a tariff protest when AT&T files its plans for FTS 2000 with the FCC.

MCI could not be reached for comment about its strategy in the wake of Martin Marietta's meeting with the GSA.

Free the RBHCs. New voices are expressing support for freeing the regional Bell holding companies from current business restrictions.

A transition paper prepared for the Bush administration by the Media Institute and the Freedom of Expression Foundation, two nonprofit research groups, urged policymakers to minimize regulation.

Limits on the RBHCs' role in the information services market

(continued on page 10)

Department store revamps net in time for Christmas

PBX handles additional traffic for growing chain.

By Wayne Eckerson
Staff Writer

MIAMI — Three days before Thanksgiving, Burdine's Department Stores completed a major network overhaul needed to get the newly expanded retail chain through the busy holiday season.

A decade of expansion and a merger last spring that added 40 stores to Burdine's network threatened to overload the capacity of the company's 15-year-old AT&T switch.

Faced with the task of upgrading its network to accommodate the holiday crunch, Burdine's hired Tel Plus Communications, Inc. to replace the AT&T switch — its major switching hub here — with an NEC Corp. NEAX 2400 Information Management System private branch exchange.

The new switch is the main hub in a tandem network that uses T-1 digital facilities to link about 80 statewide Burdine's stores, distribution centers and office sites.

All calls destined for stores in southeastern Florida are routed through the switch, which supports 720 trunks. Of these trunks, 624 are channels within 26 T-1s and the rest include out-of-state long-distance lines and incoming 800 trunks.

The switch routes customer service calls to three switching hubs located in Orlando, Tampa and Gandy, Fla.

Preparing for the crunch

Burdine's needed to move quickly to avoid a network logjam during the busiest season of its year. "The Christmas season is absolutely the wrong time of year for a retail business to make changes in its network, but we were flat out of capacity," said William Young, telecommunications manager at Burdine's.

Tel Plus gets award

Tel Plus, a Boca Raton-based distributor owned by Siemens Information Systems, Inc., was awarded the contract — reportedly valued at $1 million — because it could perform the installation faster and with fewer changes than the three other bidders, according to Young. The other bidders included AT&T, Southern Bell Advanced Systems, Inc. and GTE Corp.

The architecture of the NEAX 2400 PBX that Tel Plus installed was compatible with Burdine's previous switch and required fewer changes in the existing network, Young said. The new switch handles greater traffic volume but is one-third the size of the old switch.

"We didn't have the time or money to spend reconstructing our existing switching room or reprogramming the network. This was the deciding factor in awarding the contract," Young said.

Young said he believed Tel Plus would make the greatest commitment to meeting Burdine's Thanksgiving deadline for the cutover. He said he also believed Tel Plus would provide the best service because its headquarters is located in Boca Raton, Fla., closer to Burdine's switching center than any of the other bidders.

Tel Plus installed the equipment in just 60 days, well under the three to four months it usually takes for such installations, Young said. "We took a big chance, and Tel Plus came through for us," he said.

The old network was pushed to its limits when Burdine's, a division of Federated Department Stores, Inc., gained 40 stores last spring as a result of a merger between Federated and Allied Stores Corp. Burdine's stores now include Wm. Filene's Sons Co., Abraham & Straus and Bloomingdale's. Allied stores include Maas Brothers, Inc. and Jordan Marsh Co.

The retail chain's Florida network includes two major and two minor tandem-switching hubs as well as trunks to 80 locations. The store decided to install T-1 circuits in conjunction with the new PBX because the state is phasing out availability of Telpak, a bulk discount service for analog leased lines.

"They are forcing us to migrate to digital facilities, and this was the perfect opportunity to make the necessary changes," Young said.

User-friendly

The engineering capabilities of the NEAX 2400 PBX also made the Tel Plus offer attractive to Burdine's. The switch has a redundant power supply and a distributed architecture. It is also modular, which means more capacity can be added as the company's networking needs grow.

"The NEC switch looks like it was engineered for the customer's needs, which is not typical," Young said.

In addition to the NEC switch and T-1 lines, Tel Plus installed a Dytel Corp. automated attendant system, 30 NEAX 2400 attendant consoles and an Octel Communications Corp. Aspen voice mail system that supports 500 users.

The automated attendant system answers incoming calls and, using automatic call distribution features of the NEAX 2400, routes them to operators at four customer service centers. This system is helping to slow the number of new operators Burdine's must hire for its customer service department, Young said.

Toshiba launches system rentals

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Toshiba has an installed switch base of two million lines, he said.

The Perception PBX can be configured to support a maximum of 64 trunk lines and 192 extensions. The Perception II handles 64 trunks and 240 stations. Both PBXs use time-division multiplexing and pulse code modulation. They also feature a nonblocking switching matrix.

The Strata family of key telephone systems includes the Strata S, a three-line, eight-station system; the Strata VI, a six-line, 16-station switch; the Strata VII, a 12-line, 32-station unit; and the Strata XX, a 21-line, 56-station switch.

The Strata XII is equipped to handle two tie lines; the Strata XX supports four.

Strata key system features include autodialing, autohold recall, multistation and multitrunk conferencing, message waiting and toll restriction.

The Strata switches support 10- and 20-button electric telephones and a wide variety of display features. Station features supported include automatic callback, call forwarding, call transfer and trunk queuing.

Toshiba's Intouch voice-messaging system, manufactured by Vosys Corp. of San Jose, Calif., works with the Perception PBXs and the Strata key systems.

Users can set parameters, including the number of messages per mailbox, message length and holding time.

The Intouch system can be remotely administered and reconfigured, and it can generate statistical usage reports. The voice-messaging system supports several automated attendant capabilities.

TSD sells its equipment through a nationwide dealer network, independent telephone companies and PacTel InfoSystems, Pacific Telesis Group's equipment sales arm.

Voice response stirs interest

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from voice-response systems include improving customer service, gaining a competitive edge and reducing the work load for service representatives.

Improved customer service

"The overall benefit most bankers cited for installing a voice-response system was improved customer service," said Jane Kurson, the report's author and a research associate for BAI. Based in Rolling Meadows, Ill., BAI is a nonprofit organization that provides educational and research materials to its member banks.

According to the study, factors driving the acceptance of voice response include technological advances that have lowered its cost and made it easier to install, and banks' efforts to keep up with competitors.

"We feel we need to [install voice response] because all our competitors are doing it," said Pamela Clarke, marketing officer for McLean, Va.-based First American Metro Corp. "It will also take routine calls for account balances away from the customer service representative."

Using the systems to handle balance inquiries could enable banks to stop adding customer service representatives, said W. Kevin Maher, assistant vice-president for Cashflow, Inc., a Norfolk, Va.-based subsidiary of Sovran Financial Corp.

Maher said his firm's Maryland-based bank has had a voice-response system in place for 11 years. That system supports balance inquiry and tells callers the amounts of the last five checks they have written. The bank intends to replace that system soon and is trying to justify implementing voice response in its other banks, he said.

Based on the survey responses, Kurson said it is hard to pinpoint system usage figures. The report said that in one month, the majority of banks receive 35,000 account balance inquiries and process 10,000 funds transfers.

The amount of money spent on a voice-response system is related to the bank's size, Kurson said. Nearly 18% of the respondents said they paid more than $200,000 for their system, while 55.2% paid less than $100,000, and 4.5% said they spent less than $25,000.

> The amount of money spent on a voice-response system is related to size.
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In addition, 47% of the banks with installed systems said they spent less than $25,000 to upgrade to newer technology, while 4.5% spent more than $200,000 on upgrades.

In other findings, more than 80% of the respondents said they do not charge a fee for account-balance inquiries. However, two-thirds said they charge a fee for transferring funds from one account to another and for paying bills over the phone.

Another 24% said they do not charge for transferring funds as long as the customer meets certain conditions, such as maintaining a minimum balance. Of the banks that charge a fee for transferring funds, 20% charge a flat monthly fee, while 16% charge a per-transaction fee.

Washington Update

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go far beyond what is needed to guard against anticompetitive behavior, according to the paper. Such restrictions hurt the public by reducing competition, impeding the development of new services and limiting the U.S.' competitiveness in the global economy.

Information services restrictions also violate the RBHCs' First Amendment rights, the paper concluded.

The study's coauthors, Craig Smith, president of the Freedom of Expression Foundation, and Patrick Maines, president of the Media Institute, urged Bush to support a resolution, introduced in Congress this year, to eliminate RBHC business restrictions.

The resolution, which is a way for Congress to express its opinion on this issue, gained the support of about 200 U.S. representatives but only two U.S. senators.

Soviet linkup. Globenet, Inc., a packet-switching service provider based in Alexandria, Va., announced an agreement with San Francisco/Moscow Teleport, Inc. that will allow users to communicate with sites in the Soviet Union.

Globenet said it will be providing the first direct packet network between the U.S. and the Soviet Union. Previously, all communications went through Austria.

Globenet officials said the direct connection will mean lower costs for users and more reliable communications. The packet network was scheduled to begin operation on Jan. 1.

DATA COMMUNICATIONS

PRODUCTS, SERVICES, ARCHITECTURES, STANDARDS AND NETWORK MANAGEMENT

Worth Noting

"The future lies in seeing [electronic data interchange] not as an end, but as a means to build a more efficient and effective operation."

Winston Hindle
Senior vice-president
of corporate operations
Digital Equipment Corp.
Maynard, Mass.

Data Packets

The **American Electronics Association (AEA)** recently announced a service for its members and their trading partners that provides electronic data interchange (EDI) and access to informational data bases.

Dubbed AEALINK, the service is available to the AEA's 3,500 member companies over IBM's Information Network, a value-added public packet network.

AEALINK is intended to provide a medium for the organization's members to communicate with one another as well as with their suppliers and customers, the AEA said.

"AEALINK will enhance industry competitiveness through improved communications and streamlined business procedures," AEA President and Chief Executive Officer J. Richard Iverson said in a prepared statement.

The network will provide EDI based on the Electronics Industry Data Exchange standard, which is a version of the ANSI X.12 EDI standard adopted by the AEA.

Users will also have access to various AEA services, surveys, issue statements and public announcements as well as to informational sources such as the Congressional Quarterly.

Beginning this month in the Northwest, the AEA will bring interested members online according to geographic area.

For more information, contact the AEA at 5201 Great America Pkwy., Santa Clara, Calif. 95054, or call (408) 987-4200.

Undersea cable may herald lower prices

TAT-8 fiber-optic cable offers approximately the same capacity as 7 transatlantic copper cables.

By Anita Taff
Senior Correspondent, Washington

WASHINGTON, D.C. — Corporate telecommunications managers planning to use transoceanic fiber-optic cables such as TAT-8 last week said they expect the increased capacity will yield new applications and may lead to price cuts.

Fiber-optic circuits will give customers greater bandwidth availability, increased circuit speeds and improved reliability over satellite transmission systems and older analog undersea cables, users said.

AT&T, British Telecommunications plc and France Telecom, the major owners of TAT-8, a transatlantic fiber cable capable of carrying 40,000 voice calls simultaneously, kicked off commercial service last month. TAT-8, which links the U.S., the UK and France, is approximately equal to the combined capacity of the seven copper cables currently traversing the Atlantic.

The technology lets TAT-8 providers offer fully digital transmission circuits with almost instantaneous response time. In contrast, users previously had to choose between analog services on copper cables or digital service via satellite, both of which involve slight transmission delays. Such delays are often perceived as disruptive for voice or interactive data applications.

"The new fiber cables satisfy a requirement that cannot be met by satellite — high-speed data," said Bill Coopman, manager of telecommunicatons for John Deere & Co., the Moline, Ill., farm equipment manufacturer.

Engineering and manufacturing operations are eager for that improved speed, Coopman said, to support such applications as the sharing of large computer-aided design and manufacturing data files. Until now, satellite services have been the primary transmission means for John Deere's engineering net. However, propagation delays make sat-

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Datacom vendors build links to new NetView/PC

By Paul Desmond
Staff Writer

A select group of vendors claims to be making strides toward its goal of developing software that takes advantage of the increased bidirectional control capabilities offered in a new version of IBM's NetView/PC scheduled for release in May.

Most of the vendors that IBM provided with prerelease versions of NetView/PC Version 1.2 said they have been able to develop applications that let the host NetView console operator download to remote devices commands that trigger network management functions.

NetView/PC, designed to make non-Systems Network Architecture devices compatible with host-based NetView, has supported limited bidirectional control in the past with its Service Point Control Facility (SPCF). This feature allows the NetView console operator to respond to alerts with tests to help find the source of the problem and, in some cases, reconfigure around it ("Networks shine in IBM product rollout," *NW*, Sept. 26).

Vendors said the new version of NetView/PC, which runs under OS/2 Extended Edition 1.1, lets them better utilize SPCF because of the dramatic increase in memory that OS/2 provides compared with previous versions based on PC-DOS: 640K bytes of memory vs. 16M bytes.

Even with the increased functionality, one vendor, Timeplex, Inc., questioned the need for NetView/PC and said it will not develop a product compatible with the new version until it is clear that users want such a product.

IBM provided 11 vendors with a prerelease version of NetView/PC Version 1.2. Six received the release in October, and the other five took delivery in time to participate in a demonstration with IBM at the TeleCommunications Association, Inc. (TCA) Annual Conference in San Diego last September ("IBM demos new NetView at TCA show," *NW*, Oct. 3).

Each vendor with the prerelease software has to develop software that converts the alerts generated by its proprietary network management product into a NetView-compatible format.

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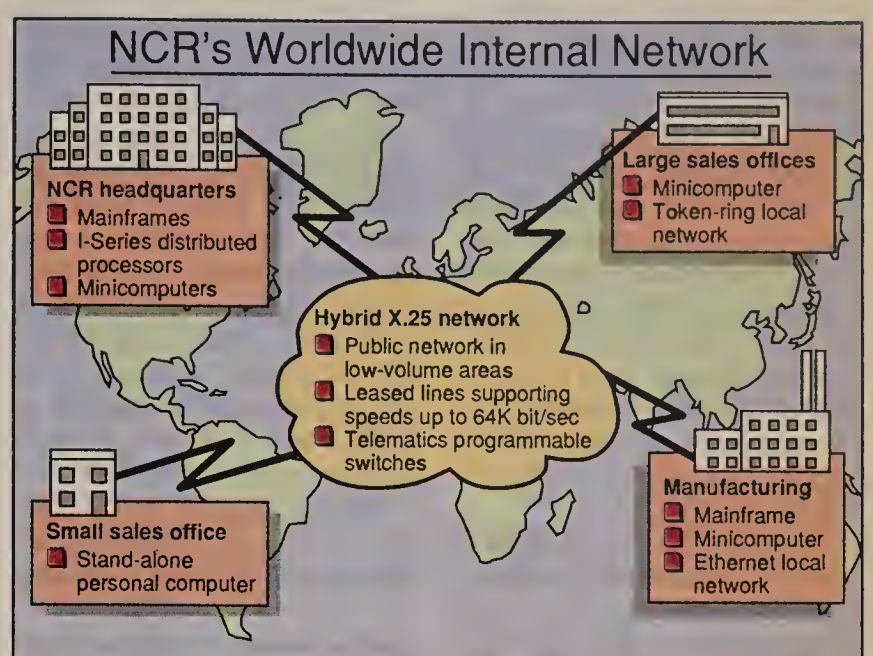

NCR's Worldwide Internal Network, an X.25 backbone comprised of a combination of leased and public data lines, will ease the load on centralized data centers and allow distributed processing at more than 1,100 NCR sites in 130 countries.

GRAPHIC BY SUSAN J. CHAMPENY SOURCE: NCR CORP., DAYTON, OHIO

NCR overhauls internal net, opts for X.25 backbone

Packet net will decentralize communications.

By Paul Desmond
Staff Writer

DAYTON, Ohio — NCR Corp. is weeding out little-used leased lines in favor of an X.25 packet-switched network that will become the backbone for its internal data communications.

NCR is redesigning its internal data network in an effort to decentralize its hierarchical communications infrastructure and facilitate user communications.

The packet net, dubbed Worldwide Internal Network, will allow NCR to eliminate leased lines dedicated to single applications and replace them with virtual circuits capable of accessing multiple applications.

In addition, NCR will install its own worldwide X.400 electronic mail application, eliminating the company's reliance on a third-party E-mail service provider. The new E-mail system promises to improve communications among NCR sites worldwide by replacing a centralized U.S. E-mail hub with distributed E-mail nodes, each capable of routing messages to various points across the NCR network.

Anywhere in the world

"When you have the flexibility of the public-switched network, you just connect to the network and then you can go anywhere in the world," said Melinda Marsh, manager of the network applications services department within NCR's corporate information systems and services division. "That's the difference between a traditional hierarchical data network and an X.25 data network."

NCR's corporate network consists of a series of subnetworks and stand-alone workstations dispersed across its 1,100 sales offices and 19 engineering and manufacturing plants in 130 countries, Marsh said.

Today, using a series of gateways, the remote sites are linked to one of two NCR data processing centers here via leased lines, dial-up links or through public packet networks. U.S. marketing offices feed into NCR's U.S. Data Processing Group data center, while all other operations, including engineering and manufacturing, link to its World Telecomputing Center here.

Although all of the offices communicate with Dayton, many do not communicate with one another because the process is too cumbersome. To send messages between its offices, NCR uses CompuServe, Inc.'s E-mail network based in Columbus, Ohio.

One of the drawbacks of the service, Marsh said, is that if an office in Japan wants to communicate with a site in France using CompuServe, it must do so through Columbus. That makes such international messaging both time-consuming and expensive, she said.

But the scenario will change soon. By the end of 1989, NCR will begin to implement its own X.400 E-mail application, which will run on processors at all NCR sites, Marsh said. The new E-mail system will enable any site to communicate directly with any other, bypassing any centralized message router. NCR expects the flexible features of X.400 to facilitate order processing and file transfer among sales offices and manufacturing sites. Today, these applications are handled through NCR's Dayton computing centers or CompuServe.

Initially, NCR plans to overhaul its network by establishing international X.25 links between

(continued on page 12)

Vendors build links to NetView

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At TCA, since the prerelease version had only been available to select vendors for seven weeks, little of the enhanced two-way communications feature in the new NetView/PC version was actually demonstrated.

Now, after several months of development with the new software, some vendors say they will soon market products that let users reconfigure portions of their networks directly from a central NetView console. Currently, users must enlist an operator at a remote network for configuration management.

The central NetView console is linked to a host running NetView. NetView receives alerts from and downloads responses to an IBM Personal System/2, Personal Computer XT or AT running NetView/PC under OS/2. The workstation running NetView/PC, in turn, is linked to whatever network management product supports each remote device, as long as that product is compatible with NetView/PC.

Dynatech Communications, Inc. of East Greenwich, R.I., is working on a product that will let its Dynanet 210 matrix switch control system support NetView/PC Version 1.2, said Peter Borowski, Dynatech's product manager for network management. The Dynanet 210 manages multiple matrix switches in a net, he said.

Borowski said he expects that users will be able to reconfigure the net or make circuit changes from the NetView console.

"If there is a failed front-end processor, for example, we expect that the NetView console operator could enter a single command that would switch an entire bank or group of modems from one front-end processor to another," he said.

That one command would pass through NetView/PC to the Dynanet 210, where it would trigger a list of predetermined commands to collectively execute the switch change, he said.

General DataComm, Inc. of Middlebury, Conn., expects that at least three of its products will support the new version of NetView/PC, said Bill Victoria, the company's director of network management systems marketing. Those products likely to support the new NetView/PC version are the Netcon Network Management System, the Megamux Transport Management System T-1 multiplexer and the Gen*Net series of statistical multiplexers.

Initially, General DataComm plans to support only basic functions such as channel, loop-back and data-set tests from the NetView console.

"Coming out of the chute, we will not allow total configuration or reconfiguration from the host [NetView]," Victoria said. "I envision over time that you'll be able to run the entire system from [NetView]."

By the end of 1989, General DataComm is expected to release a product that supports real-time configuration management of its products from NetView, he said.

Other vendors are not as wholehearted in their support of NetView/PC. Antoine Gaessler, network management group product manager for Ungermann-Bass, Inc., said his firm is developing a product that will let NetView console operators send basic operational commands to its Net/One local net management system via NetView/PC.

Those commands would allow NetView operators to enable or disable a port or reset a network interface unit but not to reconfigure the network, he said.

> "I envision that you'll be able to run the entire system from NetView," Victoria said.
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Gaessler said it is not practical to write code that allows a NetView console operator to reconfigure an Ungermann-Bass Access/One local network. Due to the complexity of the commands involved, such reconfigurations are better when performed locally.

Do users want NetView/PC?

David Woodall, assistant vice-president of product marketing for Timeplex, said his company is in the process of gauging user demand for NetView/PC and will wait for those results before investing further development efforts in a product that supports NetView/PC. So far, Woodall said, there is no evidence that users are interested.

"We have supported NetView/PC to the degree that our customers have requested," he said. "We're not in a position to generate interest in NetView/PC — that's something IBM needs to do in terms of releasing a product that has sufficient feature-richness to interest customers. My observation is that they have not really done that to date."

A second T-1 vendor, StrataCom, Inc. of Campbell, Calif., echoed the Timeplex argument. David Owen, StrataCom's director of product marketing, said StrataCom has only two customers that integrate StrataCom's Integrated Packet Exchange FastPacket bandwidth manager with NetView/PC.

"I think when the OS/2 version is released with the interactive capability, that would improve quite a lot, but up until now, there's not been enough functionality to really excite the user base," Owen said.

Both StrataCom and Timeplex are in the process of determining what functionality users of its T-1 equipment want them to provide in support of the new version of NetView/PC, Woodall said. Owen said StrataCom would probably support fault-isolation commands from the NetView console but, due to lack of customer demand, would not allow configuration. Woodall said Timeplex could not commit to releasing a product that supports the new version of NetView/PC.

Other vendors with prerelease versions of NetView/PC Version 1.2 are: Applied Systems Technologies, Inc.; Bytex Corp.; McDonnell Douglas Network Systems Co., which operates the Tymnet public packet network; TelWatch, Inc.; and TSB International, Inc.

NCR overhauls internal net

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the U.S. and eight European countries, Marsh said. To cross the Atlantic, NCR will use a 56K bit/sec dedicated line it currently leases from AT&T and British Telecommunications plc, as well as a circuit to France that it reserved on TAT-8, the world's first undersea fiber-optic cable, which was cut over late last year ("Users, carriers christen first undersea fiber cable," *NW,* Dec. 19).

The two transatlantic circuits will be used to back up each other, so a user will have links to both the French and UK lines, Marsh said. From the sites in France and the UK, where the international lines terminate, NCR will lease lines into countries where data traffic justifies a dedicated link. The company will use public packet network providers to link to countries where traffic is light.

An integral component of NCR's planned X.25 backbone network will be Telematics International, Inc.'s Net 25 family of packet-switching equipment. The switches will handle all traffic on NCR's leased lines at speeds up to 64K bit/sec and will provide the interface between the private lines and the public nets, Marsh said. She could not detail how many of the switches will be used.

Marsh said NCR will take advantage of the power of its minicomputers by allowing its manufacturing and sales sites to process data locally, rather than depending on a data processing center in Dayton. Those sites will transmit only critical data to company headquarters.

Much of the savings expected by NCR will come from reducing the number of circuits into the Worldwide Telecomputing Center, which uses a statistical multiplexer-based network. Remote sites access the center by leasing a virtual circuit for each application that must be processed at the center, Marsh said. The circuits cannot be switched from one application to another, so each remains idle when its application is not needed.

By contrast, X.25 lets users access applications from a single dedicated or dial-up line by providing dynamic virtual call capability. This capability lets users switch calls according to application, Marsh said.

Under the Worldwide Internal Network, each country will be expected to manage its own portion of the X.25 network. NCR expects its remote sites to control their network nodes by using the network management features built into the Telematics switches or, in countries where public packet networks are used, with the help of a net provider.

The push for X.25

The plan to migrate to an X.25-based net began with the corporate telecomputing staff, which had to sell the idea to each of five distinct development and production divisions, Marsh said. Each division is considered an individual operating unit, and upper management did not issue a mandate for each to migrate to X.25.

The chief argument against the Worldwide Internal Network was that few employees had experience implementing X.25 on such a large scale, Marsh said. The telecomputing staff refuted the argument by repeatedly explaining the benefits in terms of flexibility and cost savings.

"We just made a decision that, rather than continue to proliferate proprietary kinds of networks with gateways, we would just sit down and plan the right network that would accommodate all needs and start putting it in place," Marsh said. "That right net happened to be OSI X.25."

Cable to herald lower prices

continued from page 11

ellite services inappropriate for such applications. Engineers need to have transmission speeds so fast that design drawings almost appear animated, he said.

Ed Stephan, manager of alternative communications systems at GE Information Services, said he expects fiber-optic transoceanic cables to result in excess capacity and, therefore, price reductions. However, he said it was not clear when such decreases might occur.

GE Information Services buys bandwidth on international facilities and resells it along with value-added services such as electronic mail and electronic data interchange. The company has no problem with satellite transmission delays for the majority of its services, Stephan said.

"Some of the more antiquated protocols are less tolerant of the delays on satellite," Stephan said. X.25 packet switching is particularly prone to such delays.

With the advent of transatlantic fiber-optic circuits, some industry analysts have predicted that the new fiber capacity, whether used for domestic or international transmissions, may mean the ultimate demise of satellite services.

Bruce Crockett, president of Comsat World Systems Division, the largest supplier of international satellite service in the U.S., dismissed these claims.

"The average communicator in a major corporation doesn't care if [the transmission] comes through cable or satellite as long as it is cost-effective and reliable," Crockett said. "He would be happy if it came through the water faucet as long as it works."

Concerns regarding satellite transmission delays are more perceived than real, Crockett said. If the delay is held to fourtenths of a second, it is considered acceptable even for voice communications, he added.

Some of the delay attributed to satellite technology actually comes from switching equipment and echo-canceling techniques used in the terrestrial portion of an international transmission, he said. As digital facilities — in particular, Integrated Services Digital Network services — become widely available, terrestrial sources of delay can be minimized, Crockett said.

Although satellite vendors may face increased competition from transoceanic cables, users should not expect deep price cuts from Comsat World Systems. Crockett said there is not a lot of excess capacity in the international transmission market now. He added that he does not expect to see any extra capacity until the early 1990s.

"There will be some excess capacity, but I also think the rate of growth will far exceed anyone's expectations. We expect TAT-8 to fill up pretty quickly," he said.

Crockett acknowledged that some customers view satellite services as a way to back up cable systems, but he contended that they can be used as primary transmission systems.

Users seem to have a slightly different view of what TAT-8 may mean in the industry.

John Deere's Coopman said his company, which transmits about 80% of its data via satellite, will cut back to 60% once it contracts for space on TAT-8. Satellite facilities will be used in large part for backup, he said.

Coopman said he had hoped the new fiber-optic cable would mean price reductions for international services, but he questions whether that will happen.

Whenever a user buys international service, the charge is divided between the U.S. carrier and the foreign carrier. Even when prices are reduced in the U.S., "the foreign end is still a monopoly, and they charge what they want," Coopman said. "A lot of times we see price drops touted here, but you need to read the small print."

Worth Noting

"The cost of fiber-optic cable is dropping steadily; it now costs only about three times as much as coax cable. That's pretty good when you consider that just a couple of years ago, it was about 10 times the price of coax."

Arnie Lapinig
Director of marketing
10NET Communications
Dayton, Ohio

Netnotes

3Com Corp. and **Telesystemes Reseaux,** a division of **France Telecom,** recently announced they will codevelop an X.400 gateway and an X.25 router that will enable 3Com and other local networks to exchange electronic mail with other X.400-compatible systems.

3+Open Reach/X.400 and 3+Open Internet/X.25 will allow workstations such as the IBM Personal Computer, Personal System/2 and Apple Computer, Inc. Macintosh computers on 3+, 3+Open and other local networks to exchange E-mail with mail systems such as IBM's Professional Office System and Digital Equipment Corp.'s All-In-1.

The products are also compatible with public mail systems such as Telenet Communications Corp.'s Telemail and Transpac's Atlas 400, 3Com said.

The X.400 product consists of software only, while the X.25 router consists of a hardware card and software.

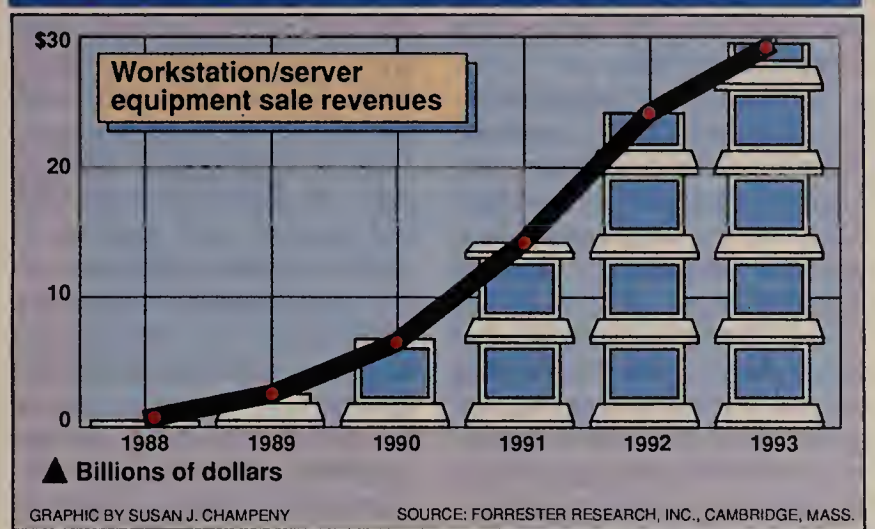
The card works on any AT bus-compatible workstation, including the IBM Personal Computer, Personal Computer/AT, Personal Computer/XT or compatibles.

The products will be available in French and English versions in the summer.

Prices for the products are not yet available.

For more information, contact 3Com by writing to 3165 Kifer Road, Santa Clara, Calif. 95052, or by calling (408) 562-6400.

Workstation/server forecast



GRAPHIC BY SUSAN J. CHAMPENY SOURCE: FORRESTER RESEARCH, INC., CAMBRIDGE, MASS.

Bell Labs patent proves microwave LAN feasible

Concept uses technology that is available now.

By Paul Desmond
Staff Writer

HOLMDEL, N.J. — AT&T Bell Laboratories here received a patent recently for conceptualizing a local network that uses microwave radio to transmit data.

Although the patent was not for a particular product, it details the use of existing technology to build a microwave local net. AT&T would not say if a microwave-based product is planned.

"The key point here is that the technology is available," said Jack Winters, a Bell Labs researcher who worked on the patent. "[A microwave local net is] not something that requires any technology that's not available now, and the cost isn't going to be exceedingly high either."

Winters and Anthony Acampora, who is also a member of the Bell Labs technical staff, described a media access technique for a microwave-based local network as well as a method to solve the problem of multipath — the manner in which microwave signals bounce off walls and become distorted within a building. The patent was assigned to AT&T.

The patent approval culminates four years of study on the feasibility of using microwave to transmit data and voice within a building, Winters said. Although AT&T has yet to test a product, Winters said the study shows a microwave local network is feasible at data speeds of 8M to 10M bit/sec.

Such networks could be developed for about the same cost as installing cable within a building and could be used as temporary local networks, such as at conventions, he said.

A primary component of the AT&T research, as described in the two-part patent, is the media access technique for a microwave local network. The plan calls for the use of a network controller device, located at a central location within a building, that polls transmitters attached to each terminal. When a terminal has data to transmit, the controller assigns it a block of space in which to transmit.

Solves multipath problem

The second part of the patent deals with multipath issues. Winters and Acampora remedied the multipath dilemma by using multiple antennas to pick up signals transmitted from each terminal. The network controller inspects the signals picked up by each antenna and chooses the least distorted signal.

Using multiple antennas and slowing the data rate of users with severe multipath problems enables the microwave net to achieve reliability ratings that approximate those of wired networks, Winters said. He has achieved data rates of at least 8M bit/sec with a probability of transmission errors down to 10^{-9}, he said.

Because of the nature of microwave and its ability to penetrate walls or floors that are not made of metal, the AT&T research shows microwave can be used for local nets that span several floors of a building.

The microwave network also has voice applications within a building and could be used to communicate among cordless telephones or to interface with a private branch exchange.

Since the system has a maximum bandwidth of 10M bit/sec and each voice channel takes 64K bit/sec, the number of voice users would be limited, especially if the network also supports data.

As the controller polls each transmitter, it gives priority to voice transmissions, Winters said, meaning data can be transmitted only when there is no voice traffic.

The year in review, and what lies ahead

Seven insiders discuss last year's trends and reveal what they expect for the future of LANs.

While there may never be any one year that gets singled out as the "Year of the LAN," 1988 saw a spate of new product introductions and a lot of changes in the local networking market.

The year started off with a whirlwind of activity as Apple Computer, Inc. and Digital Equipment Corp. announced a strategic alliance to jointly develop network products. In February, Tandem Computers, Inc. paid $26 million for local net vendor Ungermann-Bass, Inc.

As the year drew to a close, users were still digesting news of the introduction of IBM's 16M bit/sec Token-Ring Network at Comdex/Fall in Las Vegas, and more than a few customers were scratching their heads over why Apple never did get around to announcing its token-ring adapter card.

So what did 1988 mean for the industry and users? To find out, Network World *Senior Editor Laura DiDio asked leading vendors and analysts to talk about the big events of 1988 and to forecast what's ahead in 1989.*

What do you think was the biggest story in the local network industry last year?

Doug Gold, research manager of communications for the Technology Services Group, International Data Corp., Framingham, Mass.

There are a lot of big stories in an industry that's growing 50% a year. But if I had to pick one, I'd say SynOptics [Communications,

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Arnie Lapinig

LANMARKS

BY RICHARD WATSON

Do you feel the need for speed?

Advertisers know that speed sells. "Faster is better" is a powerful rule of thumb in the minds of most consumers, even among those shopping for computer hardware and software.

Local network adapter card manufacturers are taking advantage of this, hoping to boost sales by boosting the speed of their products. Trade publications are full of advertisements citing carefully staged tests and claiming that a particular card, by virtue of superior speed, is the better networking solution.

Given all this emphasis on speed, potential buyers might think that speed is the most important factor in evaluating network cards. It isn't.

Speed is important, and a faster card may indicate advanced technology. But users who can't see past their stopwatches are ignoring several factors that are equally important in the selection of adapters. Quality, reliability and adherence to standards are critical and should be given equal consideration during evaluation.

If network speed is of particular concern, one must also consider the performance of network servers, operating systems and workstations. A fast card won't speed up slow disk drives, which are often the cause of slow networks. Also, Ethernet transmission speed is faster than token ring, which is faster

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Watson is vice-president of engineering development at Tiara Computing Systems, Inc. in Mountain View, Calif.

Year in review, what lies ahead

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Inc.] provided a mid-life kicker to Ethernet technology by coming out with its low-cost wiring scheme, LattisNet, and the fact that [the company] went public in August.

The success of LAN Manager and the number of vendors that got behind it were also big news.

Arnie Lapinig, director of marketing, 10NET Communications, Dayton, Ohio

The most promising development in 1988 was that vendors realized there won't be any one dominant operating system for personal computers.

Robert Potter, president and chief executive officer, Datapoint Corp., San Antonio, Texas

[The biggest story of 1988 was] the rapid movement of PC network software vendors away from proprietary protocols and software and toward the IBM and Microsoft [Corp.] standards.

Gurshuran Sidhu, manager of network systems development, Apple Computer, Inc., Cupertino, Calif.

I think the area of network protocols saw two very important streams of activity in 1988. First was the activity in international standards, such as OSI. The Enterprise Networking Event ['88 International] in Baltimore in the summer [provided] a broader awareness of the strengths and the [gaps] in the OSI world. It seems clear today that worldwide electronic mail services will have to use X.400, and this is a promising development.

The second stream involved vendor-developed or de facto protocols. At Apple, we made significant advances in the AppleTalk Filing Protocol so that three

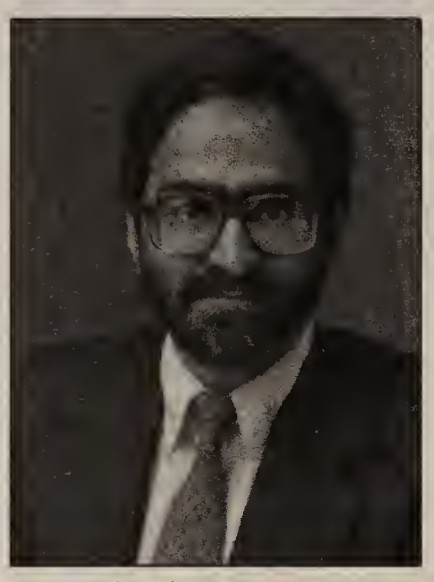
Robert Clark

dissimilar families of computers — Macs, Apple IIs and personal computers — could all share file service. In general, I think it's great that the area of vendor-developed protocols is robust and vigorously growing.

Tom White, senior vice-president of corporate strategies, Action Technologies, Inc., Berkeley, Calif., and former chairman of Infonetics, Inc.

One of the biggest stories of the year was actually something that didn't materialize. Namely, only a miniscule number of network-oriented applications based on OS/2 appeared on the market. The fact is, there aren't that many OS/2 operating systems installed, so developers are holding back on marketing what few products they have developed because the demand just isn't there yet.

Also, we started 1988 with these great expectations that we'd see the Apple/DEC alliance



Gurshuran Sidhu

bear fruit before the end of the year. That hasn't happened. We've seen program guides but no products.

Bob Clark, director of marketing, TOPS, A Sun Microsystems Company, Alameda, Calif.

The biggest story in 1988 was the acceptance of the fact that Macs and PCs have to coexist on a network in a friendly way. The PC and Mac user communities have begun to realize that their businesses are using both.

Employers are now allowing their workers to choose their desktop workstation and then finding a way for both the PC and the Mac to coexist.

Eric Benahamou, vice-president and general manager of the software products division, 3Com Corp., Santa Clara, Calif.

I'm biased because we codeveloped it [with Microsoft], but I think the introduction of the LAN Manager had a significant impact on the industry and the way users view LANs. Until 1988, people looked at LANs primarily as a way to share file and print resources.

At least conceptually now, users understand that LANs can be used to distribute applications — specifically, they should think of their file servers as having the capability to run distributed applications such as SQL Servers and groupware, and network management applications.

What are the hot trends or products to watch for in 1989?

Gold: The fact that the industry is being forced to wait another six to 12 months for [Fiber Distributed Data Interface] technology when the market is clearly ready for it.

On a more positive note, I expect token ring will become very significant in 1989.

In terms of unit shipments, token ring will rapidly approach Ethernet shipments. Token ring is growing three times faster than Ethernet. But don't count Ethernet out. Surprisingly, it's still hanging tough.

Cabletron and SynOptics, the point players in the unshielded twisted-pair Ethernet market, together did $100 million in business in 1988 in a market that was supposed to have disappeared.

The emerging technology to watch is the all-in-one bridge-router-gateway products from such companies as Wellfleet Communications, cisco Systems, Inc., Proteon, Inc. and Ungermann-Bass.

The two-pronged story to watch in 1989 is the battle between OS/2 Extended Edition and LAN Manager and where Novell [Inc.] fits into the scenario.

Lapinig: The most important task facing large corporate users in 1989 will be making the LAN part of the mainstream of the corporate information network. That means giving the LAN access to the corporate mainframe and providing wide-area connections between LANs. In 1989, we'll see increasing momentum for vendors providing links to multiple operating systems. And this year, users will actually realize their goal of connecting diverse personal computers that have different operating systems.

White: In 1989, the industry will see new types of applications that work within networks utilizing OS/2, and I'm not talking about just another data base, spreadsheet or word processor. These new applications will provide tools for the way users work and automate such functions as report assembly and graphics design in a corporate environment. I believe we'll also start to see a number of applications for IBM's Presentation Manager. Toward the end of 1989, we'll see new tools that provide corporate users with the ability to remotely administer networks.

Clark: The story I'm watching in 1989 is the acceptance of OS/2 LAN Manager and how fast it takes off. I think we'll see DOS users persisting with single-tasking applications and a slow migration to OS/2 on the workstation. LAN Manager, which is the server portion of OS/2, will catch on before the OS/2 workstation [portion].

The biggest fluke that could happen in the LAN industry would be that Apple would buy Novell, DEC would then buy Apple, and then be in turn swallowed up by Sun Microsystems, Inc.

Benahamou: This year, I think we'll finally start to see some standard network management products become commercially available. We've reached a breakthrough in the standardization of the [Common Management Information Protocol] and the [Common Management Information Protocol Over TCP]. These standards give users a common method of exchanging and manipulating network management information.

Tom White

I expect products based on these standards to be out within six to 12 months. They will let users manage multivendor networks from a central location — they can interrogate, reconfigure and reset nodes from different vendors.

Sidhu: My prediction is that a variety of international and de facto standards will continue to be supported into the near future. If people have a dream of one single protocol standard emerging and eliminating everything else, that is not going to ever be realized. This is what I call the Polyglot Hypothesis: Network systems will use multiple protocol families.

Do you feel the need for speed?

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than Arcnet no matter how fast the network card.

Comparison tests performed by manufacturers don't always tell the whole truth about adapter cards. Tests are often conducted under networking conditions favorable to a particular manufacturer's cards, and they rarely compare the top-of-the-line products because speed variations among them are typically insignificant.

Some tests are simply misleading. Tests performed on single-workstation and single-server networks are not at all relevant to the performance of the card on the standard multiuser network. Tests performed using network operating systems that take advantage of workstation caching are equally dubious.

In fairness to the independent testing labs and trade publications, it is important to note that most published tests are conducted accurately and without bias. The problem is, the equipment and test sites used may not compare to a user setting.

The most telling tests are those performed at the customer's facility. Potential buyers should install the adapter cards on their equipment and copy large files under normal operating conditions, timing the operations to determine speed. Actual in-facility testing may not be practical for all users; however, those making major purchases should consider it.

Quality vs. speed

The mean time between failures, a statistic many manufacturers don't divulge, is a far more significant specification than clock speed. A quality card that runs reliably will be worth much more to the end user than one that is simply fast. It's hard for the average end user to notice a difference of a minute in speed, but it's easy to notice when the network is down.

There are several ways to judge quality in advance of purchase. The type and length of the manufacturer's warranty is one good indication of quality — it's safe to say that no one knows more about the quality and reliability of a particular card than its manufacturer. If the manufacturer has confidence in its product, that confidence will show in the product support. Look for firms that offer customer training and phone-in technical support.

Standards are also very important. Cards that adhere to established industry standards are likely to be better long-term investments. Network operating systems may come and go, but cards built to industry standards will retain their usefulness as technology advances.

Look before you LAN

A reputable dealer has already done most of the evaluation work for the buyer. Dealers are motivated by quality — they don't want products coming back. These dealers understand technology and performance statistics and aren't easily snowed by mere claims of speed and other misleading specifications.

Here are a few questions the confused buyer, looking to sort fact from fancy, can ask a dealer:

- Does the manufacturer stand behind its product with a long-term warranty, a service agreement and technical assistance?
- Has it been proven reliable with the user's equipment?
- Is the product based on industry standards?

If these questions sound rather simplistic in regard to a technology as complex as networking, it's because the basics of purchasing a reliable network card are simple. The race is not always to the swift, but to the sure. Be sure to consider quality, reliability and adherence to standards, as well as speed.

Worth Noting

The extent of the use of cellular telephones depends on the number of locations a company has, according to a recent survey of Fortune 1,000 corporations that was commissioned by Seattle-based Airborne Express. Of the respondents with more than 100 offices, nearly three-quarters said they use cellular phones. Less than 50% of the users with fewer offices said they do.

Banks set to test ATMs of the future

By Jim Brown
New Products Editor

NASHVILLE — Some of the nation's largest banks are planning to implement a new breed of automated teller machines and self-service terminals that support a wider variety of functions than existing ATMs.

In addition to supporting services usually handled by tellers, these new ATMs and self-service terminals may also allow customers to make airline ticket reservations and purchase tickets for sporting and cultural events, according to the electronic banking managers who attended the recent Bank Administration Institute-sponsored Retail Delivery Systems Conference, dubbed ATM11, held here.

Bipin Shah, vice-chairman of Philadelphia-based CoreStates Financial Corp., said new microcomputer-based ATMs can handle nearly 80% of the transactions currently handled by tellers. He said six such ATMs were installed in a branch office of Philadelphia National Bank, which is owned by CoreStates. Those ATMs will be tested beginning this month.

Other electronic banking managers at the conference said they are linking so-called self-service terminals to their existing ATM networks. These self-service terminals allow customers to obtain balance inquiries and order new checks, among other functions.

Better service, productivity

Both the new ATMs and self-service terminals will help banks improve customer service and reduce the need for tellers, managers said.

According to Shah, the advanced ATMs implemented by Philadelphia National Bank will allow customers to obtain account statements, cash checks, deposit funds in multiple accounts, apply for loans and stop payment on a check. These trans-

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Sudden net crashes pose business risk

Survey finds companies could lose 40% of daily revenue as result of mainframe network outage.

By Barton Crockett
Senior Writer

ARLINGTON, Texas — Companies could lose as much as 40% of their daily revenue in the event of a mainframe network crash, according to a University of Texas survey of information systems managers.

The results of the survey, "Financial and Functional Impacts of Computer Outages on Businesses," are based on interviews with more than 150 information systems managers operating both stand-alone mainframes and mainframe-based networks.

According to Steven Christensen, one of the researchers, the survey documents what most users already knew: Computer systems and networks have become a vital part of most businesses.

"With very few exceptions, respondents to this survey are heavily to totally dependent on their computer systems," Christensen said. "If they go down, companies lose revenue, sales and functionality."

Daily revenue drain

Survey respondents estimated the losses their companies would suffer for each day of mainframe network outage (see chart on page 16). Average losses were pegged at 25% of daily revenue after six days, a figure that climbed to 40% by the 25th day of an outage.

On average, a company would lose five full days of revenue by the 25th day of an outage. Assuming 250 working days per year, a company averaging $250 million in annual revenue could expect to lose more than $5 million by the 25th day of an outage, according to the study.

The respondents made these estimates assuming they had successfully implemented a disaster recovery plan. Nearly 63% said they had such plans, which varied from schemes to handle operations manually to cutting over a backup data center. If they were unable to implement contingency arrangements, the respondents said, average daily losses would be 2½ times higher than their original estimates.

The surveys were completed in 1987 by information systems managers at firms split equally between those with revenue above and below $100 million annually. About 17% of the man-

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Association Watch

The **International Communications Association (ICA)** is gearing up for its 15th annual Winter Seminar, which is scheduled to be held Feb. 7 through 10 in Arlington, Va.

The seminar will focus on issues in international communications as well as emerging standards and technologies.

Scheduled for the 2½-day event are presentations by telecommunications officials from the German and Japanese embassies. In addition, Cory Van Wolvelaere, a partner with Arthur Andersen & Co.'s Telecommunications Consulting Practice in Chicago, will give a speech on language, culture and politics in the global marketplace.

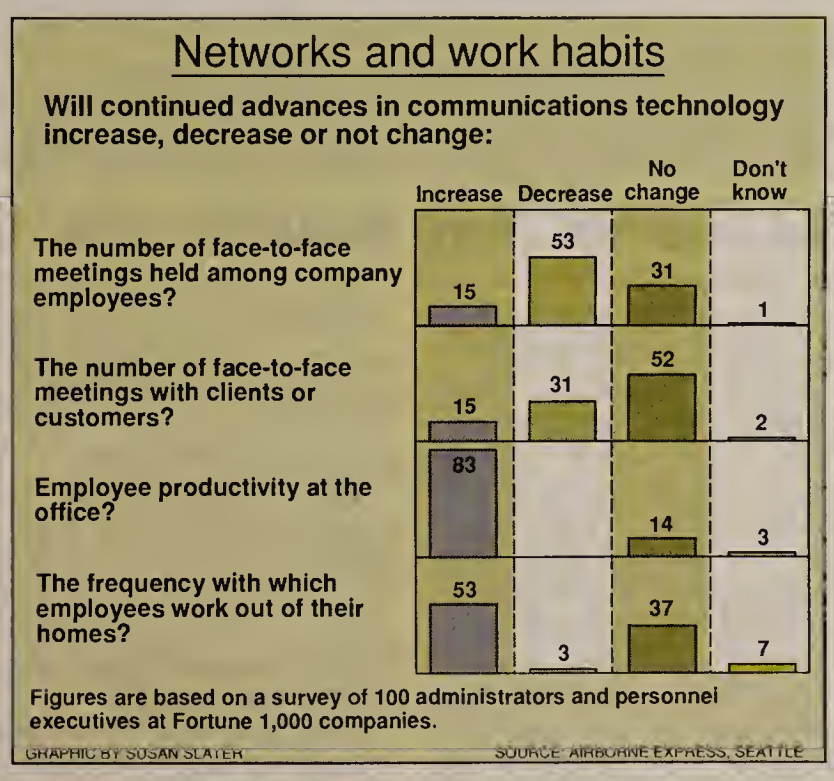
Also slated is a user panel discussion on building and operating networks in Europe, the Pacific Rim countries and North and South America. The discussion will feature speakers from the Orient Express, Pan American World Airways, Inc., Qantas Air and Philip Morris International.

The event costs $595 for ICA members and $695 for nonmembers.

For further information, call the ICA at (800) 422-4636.

EXECUTIVE BRIEFS

BY BARTON CROCKETT



Face the fax. Is communications technology making the office a more impersonal place?

It appears so, at least according to a survey conducted in October for the Seattle-based overnight delivery firm Airborne Express. For its "1988 Office Management Survey," Airborne Express commissioned researchers to interview 100 personnel and administration executives from Fortune 1,000 companies.

Among other questions, respondents were asked what effect improvements in communications technology will have on personal interaction in the office. More than 50% said they thought technology would decrease the number of face-to-face meetings among employees. Thirty percent said technology would have no impact on the number of such meetings, while 15% said it would increase them.

Survey respondents thought communications technology

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INTUG gives praise to new global networking treaty

Conference-goers settle differences, finish job.

By Wayne Eckerson
Staff Writer

LONDON — Officials of the International Telecommunications Users Group (INTUG) said recently they were relieved that national representatives at the World Administrative Telegraph and Telephone Conference-88 were able to hammer out a treaty that will govern global networking into the next century.

INTUG sent an 11-person delegation to the conference, which was sponsored by the International Telecommunications Union (ITU), an arm of the United Nations. The conference was held in Melbourne, Australia.

INTUG, based here, is an international association comprising representatives from multinational corporations and 20 national users groups. The association represents users' interests before international groups such as the European Commission and the Consultative Committee on International Telephony and Telegraphy.

At the Melbourne conference, representatives from 112 countries signed a treaty specifying new regulations for international communications ("U.S., 111 other countries endorse treaty governing int'l networking," *NW*, Dec. 12).

Donald Stevenson, INTUG's director of public affairs, said, "I am relieved that an agreement was reached. The ITU as an institution would have been in poor shape if the conference had adjourned without an agreement."

According to Stevenson, the conference was initially polarized into two factions, one led by the U.S. and the UK, and the other by France and several African nations.

The U.S. and the UK opposed initial treaty drafts that called for

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Banks set to test ATMs of future

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actions are currently performed by a bank teller or customer service representative.

"These machines will replace tellers in the future," Shah said.

The bank worked for 18 months with two vendors to build the microcomputer-based ATMs. The pilot project also required modifications to the host software that supports ATM transactions and communications, Shah said.

The microcomputer-based ATM runs application software that controls the screens used by customers and transparently invokes communications when host-resident data is needed. The microcomputer will be able to download host data, perform calculations and present a result to the customer.

For instance, the microcomputer can download account data from the host and use data entered by the customer to calculate new account balances or loan payment schedules.

Other possibilities

Shah said new ATMs could be designed to access a mainframe file detailing a preestablished credit limit for each customer. Customers using one of the ATMs to apply for a loan could instantly be informed whether the loan has been approved and, if so, have funds credited to their accounts.

These new ATMs could also allow customers to purchase airline tickets as well as tickets for the theater, sporting events and concerts, Shah said. These functions will require links from the bank's hosts to an airline reservation system or a computer at a theater, stadium or concert hall box office to find out if tickets are available.

After funds are electronically transferred from the customer's account to the airline or ticket seller, the ATM would print the tickets or a voucher that the customer can exchange for tickets.

"Whenever there is a transfer of payment, banks should be there," Shah said.

While agreeing that advanced ATMs offer improved customer service, New York's Chemical Bank said it would rather supplement its existing ATMs with self-service terminals that support account inquiry and other functions. Currently, the bank has 12 such Information Center terminals located throughout New York City and Long Island. "We do no promotion and people use them," said Patricia Havey, senior product manager with Chemical Bank's advanced electronic technology department.

The IBM Personal Computer-based devices are linked to an in-branch Ethernet local network. The Ethernet supports a gateway that links to Chemical Bank's X.25 and IBM Systems Network Architecture wide-area networks. Those networks support access to a Tandem Computer, Inc. or IBM host.

The self-service terminals are similar to ones currently being used by United Bank Services Co. of Colorado ("Colo. bank's micros bring customer service on line," *NW,* Feb. 22, 1988).

Customers can use the terminals to perform such functions as obtaining statements, ordering checks, making deposits, transferring funds from one account to another and determining if a deposit has been credited to their account or if checks they've written have been cashed.

Reserving ATMs

Agreeing that these functions could be performed by an advanced ATM, Havey said Chemical Bank would rather reserve ATMs for use by customers who need to obtain cash quickly.

Chemical Bank developed the self-service terminal and displayed it at the show to determine whether other banks were interested in purchasing the technology, said Joseph DeSimone, vice-president of the advanced electronic technology department.

INTUG praises global net treaty

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countries to push their public carriers and private network users to adopt international communications standards such as X.400.

In addition, early treaty versions would have allowed nations to regulate private network users in much the same way they regulate public carriers.

Dispute over these provisions threatened to deadlock the conference and torpedo chances for a new international treaty. But the provisions were dropped, enabling the body to agree on terms that almost all nations found acceptable.

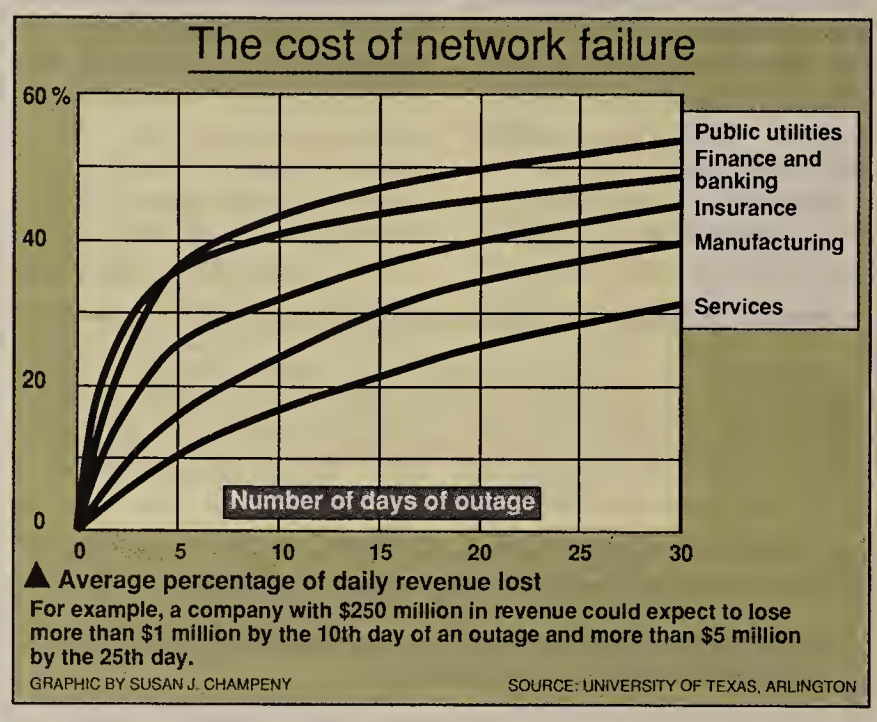
INTUG Chairman George McKendrick said he was "not dissatisfied" with the treaty. "Considering the wide range of viewpoints of member nations, I am glad that we were able to reach a compromise at all," he said.

INTUG is also watching closely the hearings of the European Commission regarding the Open Network Provision (ONP). The commission is attempting to define the conditions under which communications providers can offer enhanced network services in Europe.

"The whole idea of a competitive European market depends on the way the European Commission spells out ONP. We are hoping their decision is liberal enough to allow multiple providers to offer enhanced services," Stevenson said.

The commission is charged with carrying out the provisions of the Green Paper, which, among other things, calls for European nations to loosen regulations that prevent third parties from offering valued-added network services.

Currently, communications services are provided exclusively by the post, telegraph and telephone administrations in most European countries.



Net crashes pose business risk

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agers listed their firm's annual revenue at more than $1 billion.

Survey respondents were weighted toward manufacturing (40%), with several also in retail/wholesale (19%) and financial services (18%). More than 40% operated stand-alone mainframes that end users communicated with through dumb terminals and other means. Twenty-three percent tied their mainframes to nets, and 20% connected their mainframes directly to other machines using channel attachments.

Rising costs

In addition to sapping revenue, mainframe crashes also inflate a company's cost of doing business. These costs, as reported in the study, range from 2% of annual revenue on the first day of an outage to almost 25% by the 30th day.

About 75% of the respondents said that by the fifth day of an outage, their firms would experience serious or total loss of the ability to perform basic business functions. By the 15th day, the respondents said, their firms would suffer even more, with 85% saying their companies would experience critical or total disruption.

More research to come

Before beginning the research, Christensen said he performed a literature search and found only one study on the same subject — conducted in 1978 and confined to a select group of companies in Minnesota.

Christensen said he felt this research was simply not enough for such a critical area. To upgrade existing data, he teamed up with Lawrence Schkade, a professor at the Center for Research on Information Systems at the University of Texas here.

Christensen said he and Schkade would like to expand their current research and explore issues not examined in this study. They are considering a study that would differentiate how much large and small companies would be hurt by mainframe network outages.

Christensen added, however, that he needs more funding from private industry or the university to carry on this research.

Users group responds to FCC ruling

By Wayne Eckerson
Staff Writer

WASHINGTON — The Ad Hoc Telecommunications Users Committee is currently drafting its response to a recent Federal Communications Commission ruling that permits strategic pricing for special access services under certain circumstances.

The FCC ruled in October that the regional Bell holding companies should be allowed some freedom in pricing special access services as a way to discourage bypass and customer migration from public switched services ("FCC rules that RBHCs can make limited use of strategic pricing," *NW,* Oct. 17, 1988).

However, opponents of strategic pricing claim that the practice has led to overpricing of special access tariffs.

The FCC ruling defined standards against which the agency will judge the legality of strategic pricing of special access. The FCC has asked carriers to submit written arguments by Jan. 3 that prove their special access rates are lawful under the new standards.

Jim Blaszak, legal counsel for the committee, said users have until Jan. 23 to submit their comments or to challenge cases submitted by operating companies.

"This is a terribly important matter. This proceeding will set the ground rules for pricing certain access services for the foreseeable future," Blaszak said. "We believe rates charged by operating companies in strategic pricing cases are excessive and unlawful."

The committee represents the interests of its members before government bodies that deliberate on telecommunications issues.

On a different matter, the users group is advising the FCC on a number of issues involving a new 800 access service being offered by several RBHCs.

Blaszak said the new 800 service allows companies to retain their 800 numbers if they switch long-distance carriers. This means companies can switch carriers without having to rewrite their advertisements to include a new 800 number.

Currently, companies must change their 800 numbers when they change carriers.

Unfortunately, the new service adds about seven seconds to the time it takes a caller to establish a connection.

The delay increases network usage charges and requires reprogramming for certain applications, Blaszak said. The delay might also affect customer perception about the quality of service being provided.

Executive Briefs

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would have less impact on interaction between employees and their clients or customers, however.

Nearly 70% said communications technology would either increase or not affect the number of meetings between employees and their clients or customers.

More than 80% of the respondents said they thought communications technology would increase office productivity.

According to a spokesman, Airborne commissioned the study in part to gauge the impact of technologies such as facsimile and electronic data interchange on corporate demand for express mail.

"We are interested in these trends," the spokesman said. "Some analysts believe they are carving into the air express market."

The spokesman added that the study confirmed Airborne's belief that demand for air express continues to mount despite the proliferation of communications technology.

"We are finding that these two modes of communications are complementary, not exclusionary," the spokesman said. "Big companies need to use several forms of communications."

In the study, 81% of the respondents said their company is making greater use of facsimile than it did a year ago. Thirty-eight percent said their firm's use of air express had increased as well. Only 14% said their company's use of air express had declined, while 39% said it remained the same.

PRODUCTS & SERVICES

THE LATEST OFFERINGS FROM VENDORS AND CARRIERS

Worth Noting

See inside for:

- ACS is developing network security devices
- Local Data software links lap-tops to mainframe electronic mail
- Torus software lets Tapestry II users access NetWare disk drives

First Look

Fiber mini-to-disk drive link bows

Hewlett-Packard Co. recently announced a fiber-optic interface board that supports high-speed data transfer between HP Precision Architecture (HP-PA) computers and disk drives.

The **HP Fiber Link (HP-FL)** interface transmits data between the two devices at a burst transfer rate of 5M byte/sec. Disk drives and computers can be located up to 1,650 feet apart.

Each interface card and fiber cable supports connection to up to eight disk drives for a maximum storage capacity of 17.1G bytes when used with an HP 3000 Model 955.

In comparison, the HP Interface Bus — the existing way to link HP-PA computers to disk drives — has a cable length of 50 feet, a data transfer rate of 1M byte/sec and support for six disk drives.

HP said its fiber interface is less susceptible than coaxial cable to interference from electromagnetic signals and also provides a higher level of data security.

Versions of the HP-FL board are available for the HP-PA product line, which includes the HP 3000 Series 900 and the HP 9000 Series 800 family. The HP 3000 or HP 9000 versions of the HP-FL fiber-optic board cost $5,800 and come with a 100-ft.-long fiber cable. This cable may be replaced with a custom-length cable up to 1,650 ft. long.

Hewlett-Packard Co., 3000 Hanover St., Palo Alto, Calif. 94304. Call the HP sales office listed in your local White Pages for sales information.

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Package lets servers use TCP/IP, LAT

By Jim Brown
New Products Editor

MOUNTAIN VIEW, Calif. — Sytek, Inc. recently released software that enables its line of Ethernet terminal servers to support multiple network protocols. The company also announced a pair of terminal servers for broadband networks.

LocalNet Integrated Network Connectivity (LINC)/Term software runs on Sytek terminal servers and supports Transmission Control Protocol/Internet Protocol as well as Digital Equipment Corp.'s proprietary Local Area Transport (LAT) protocol. LINC/LAT software runs on MS-DOS-based microcomputers and enables them to connect to other local net-attached devices that support the LAT protocol.

Sytek's existing terminal servers support the company's LocalNet Transmission Control Protocol/Internet Protocol Software for Terminal Servers. Sytek will continue to support the product, which is based in part on TCP/IP. The new software, however, lets users choose either the TCP/IP protocol or the LAT protocol that they need to connect to a particular host.

Sytek describes LINC/Term as network operating software for terminal servers. It supports both TCP/IP and DEC's LAT, which manages the routing between DEC terminals, printers and hosts attached to a DECnet network.

The software enables attached terminals or personal computers to connect to Ethernet devices via TCP/IP's Telnet virtual terminal protocol or via LAT protocols.

Sytek said a future version of LINC/Term will permit terminal servers to support the International Standards Organization's Open Systems Interconnection Virtual Terminal Protocol.

LINC/Term can be downloaded to a network-attached terminal server via a personal computer running Sytek's Downline Loader Protocol Network Loader software.

Running on terminal servers

(continued on page 18)

Teleos unveils portable CO switch simulator

By Jim Brown
New Products Editor

EATONTOWN, N.J. — Teleos Communications, Inc. recently announced a portable version of its central office telephone switch simulator capable of supporting Integrated Services Digital Network services.

The company's Portable CO Simulator System enables users to develop and test ISDN applications. It can also be used to give on-site demonstrations of ISDN services and help train personnel in charge of maintaining ISDN networks.

The Portable CO Simulator System can act like a private branch exchange that provides an ISDN Basic Rate Interface connection between attached devices. It can also link to AT&T 5ESS and 4ESS central office switches via an ISDN Primary Rate Interface line, which is a T-1 facility supporting 23 64K bit/sec data or voice channels and one 64K bit/sec signaling channel.

At the heart of the system is a scaled-down version of Teleos' ISDN Adjunct Processor, which is a switch that emulates the functions of a central office switch. The ISDN Adjunct Processor appears to ISDN telephones and Basic Rate Interface terminal adapters as if it were a central office switch supporting ISDN ("ISDN controller acts as BRI concentrator," *NW*, July 11).

The ISDN Adjunct Processor supplied as part of the Portable CO Simulator System has six board slots that fit into the unit's VME bus. The company's larger ISDN Adjunct Processor supports 20 board slots and a VME bus.

Four of the slots support either Basic Rate Interface Unit or Primary Rate Interface Unit boards.

A Basic Rate Interface Unit board provides four ports. Each port supports two 64K bit/sec B channels and one 16K bit/sec D signaling channel, which is ISDN's Basic Rate Interface. The Primary Rate Interface is supported through use of Primary Rate Interface Unit boards.

One of the six slots is used to support an ISDN Network Processor board, which has two RS-232 interfaces. One of the RS-232 interfaces supports an IBM Personal Computer used as an administrative terminal. The board also controls the ISDN Adjunct Processor's operations and supports processing of D channel signaling.

Another slot is used to support a VME/Telecom Interface Unit, which links the unit's boards to the VME bus.

That VME bus supports the exchange of data or digitized voice

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E-mail flags Oracle's entry into new mart

Electronic mail software offering touted as part of strategy to penetrate office automation mart.

By Rex Bowman
West Coast Correspondent

BELMONT, Calif. — Oracle Corp. recently unveiled an electronic mail software package as part of its ongoing strategy to expand into office automation markets.

The debut of Oracle*Mail strengthens the company's office automation product line. Oracle, which is better known for its data base management products, will roll out communications offerings as a means to move into the office automation market and drive demand for data base management offerings.

The company created an office automation division last August to develop software products supporting text retrieval, document management, scheduling and calendaring. Oracle has offered two spreadsheet products for several years already. Those products are now the responsibility of the office automation division.

According to David Martin, director of product management for the office automation division, Oracle's strategy is to use its expertise in data base management to set its office automation products apart from competitors' offerings.

"Networking is usually a major obstacle in building office automation products," Martin said. "But we solved that years ago in terms of our distributed data base technology. So developing office automation products makes a lot of sense for us because we're just leveraging the technology we already have."

Initially, Oracle's E-mail products will be bundled with the company's flagship Oracle Relational Database Management System (RDBMS). Oracle's RDBMS is a software product that resides on hardware ranging from personal computers to mainframes.

RDBMS runs under a variety of operating systems, including MS-DOS, Unix, Apple Computer Inc.'s Macintosh and Digital Equipment Corp.'s VMS. The first version of Oracle*Mail, which is available now, will run under DEC's VAX/VMS and Sun Microsystems, Inc.'s SunOS, a version of Unix. Other versions will ship in the second quarter of 1989.

One unique feature of Oracle*Mail is its ability to store messages in the network data base instead of on the individual workstations.

With other E-mail systems, messages broadcast to 100 people are actually duplicated and delivered to the disk of the receivers' machines, Martin said. Oracle*Mail stores a single message in the RDBMS and sends out 100 message notifications. The recipients then call the message up from the data base.

Oracle*Mail also enables data base applications to automatically transmit data to users. A corporation that generates weekly sales reports and distributes photocopies of the document through interoffice mail can use Oracle*Mail to send the reports to executives electronically. Such applications are possible because the data base is integrated with the electronic-messaging system.

Oracle*Mail can store messages in the net data base instead of on individual workstations.

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Additionally, users can send entire spreadsheets or images through Oracle*Mail. Mail gateways can be programmed into the package to let users send mail to and receive mail from such proprietary mail systems as DEC's VMS Mail, AT&T's Unix Mail and IBM's Professional Office System. Oracle*Mail complies with existing X.400 and X.500 international messaging standards.

The product also lets users create structured mail forms, sort mail in any order and query messages by various criteria. For instance, a user could ask to see all messages with the words 'blue' and 'green' in them.

Although Oracle*Mail will initially be available only on Sun and DEC hardware, releases are scheduled to be announced for other systems in upcoming months. A subsequent release, expected within six months, will enable users to send messages to facsimile and telex addresses.

According to Martin, Oracle*Mail ranges in price from $1,000 to $60,000, depending on the size of the machine used and the number of users.

To contact Oracle, write to 20 Davis Drive, Belmont, Calif. 94002, or call (800) 345-3267.

First Look

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Kentrox announces T-1 line monitor

Kentrox Industries, Inc. recently announced a test system that monitors and diagnoses the performance of T-1 circuits using superframe and extended superframe formats.

Called **T-Sentry,** the product tracks T-1 line problems, such as the number of times a T-1 frame had to be retransmitted because it was received with errors, the number of times those retransmissions arrived with errors, and the number of bursty retransmissions and out-of-frame transmissions.

The system determines how often each of these problems occurred over a seven-day period and alerts network technicians to potential line faults before they happen.

T-Sentry works with Kentrox software running on an IBM Personal Computer or compatible. It is compatible with AT&T 54016 standards and can communicate with most network management systems.

T-Sentry will be available in the first quarter of 1989. Pricing has not yet been set.

Kentrox Industries, Inc., P.O. Box 10704, Portland, Ore. 97210, or call (503) 643-1681.

Network security devices encrypt data

ACS Communications Systems, Inc. recently said it is developing a pair of network security devices that control user access to a network and encrypt data before it is transmitted via a net.

The firm's **Low Cost Encryption/Authentication Devices (LEAD)** are being designed for use with the Military Network, the unclassified portion of the Department of Defense's Defense Data Network. However, LEAD can be used with any network that has its host equipment housed in a restricted facility. The National Security Agency is sponsoring the product development.

The **Single Port LEAD (SPL)** is a stand-alone unit that links to a user's terminal. It consists of an LCD that displays user prompts and messages, a card reader and a keyboard.

To start the network validation process, a user inserts his personal identification card, which supports a built-in microprocessor containing personal data, into the card reader and enters his password via the keyboard.

The network validation transaction is sent via the network to the host site, where a data base search is executed to verify the user's identification.

If the user's password is validated, the SPL encrypts all data that the user enters from the terminal before it is transmitted via the network.

At the host computer site, users would install a **Multi-Port LEAD (MPL).** The MPL is linked to a LEAD Communications Controller that contains a data base of user identification information.

Up to 16 MPLs can be installed in a Racal-Vadic, Inc. VA1690 chassis. The chassis is linked to the LEAD Communications Controller.

Both the SPL and MPL will have optional, built-in 2,400 bit/sec modems. The SPL will use a Racal-Vadic 2400PA modem, and the MPL will use a Racal-Vadic VA4492E modem.

The products will be available in May. Pricing has not yet been set.

ACS Communications Systems, Inc., 480 Spring Park Place, Suite 900, Herndon, Va. 22070, or call (703) 471-0892.

Software lets lap-top access electronic mail

Local Data, Inc. recently introduced software that enables lap-top microcomputers to access mainframe electronic mail applications via a dial-up link.

The **Applications Program Interface (API)** software enables Zenith Data Systems and Toshiba America, Inc. lap-top microcomputers to access IBM's host-resident Personal Services/Personal Computer (PS/PC) software. That software package is an E-mail application supporting IBM's DISOSS.

Using API and Local Data's TruLynx/3270 software, lap-top microcomputer users can dial into Local Data's host-attached DataLynx/3174 protocol converter to access IBM mainframes running the PS/PC program.

Previously, only personal computers linked by coaxial cable to an IBM cluster controller could access documents and E-mail on a mainframe running DISOSS.

API software is priced at $150.

Local Data, Inc., 2771 Plaza del Amo, Torrance, Calif. 90503, or call (213) 320-7126.

Software lets Tapestry access Novell servers

Torus Systems, Inc. recently announced a new software option that lets users of its Tapestry II LAN Manager software access Novell, Inc. NetWare disk drives attached to the same local net.

Torus said its **NetWare Integration Option** will also let Tapestry II LAN Manager software users access local network-attached DOS servers and Microsoft Corp. LAN Manager OS/2 servers, functions already supported by its Tapestry II product. According to the company, NetWare Integration Option is the only local network that supports all three of those net operating systems.

Users of the icon-based Tapestry II network software can run the three operating systems simultaneously and use icons to switch the active drive from a LAN Manager server to a NetWare server or to a DOS server, the company said.

The software currently works only with the Torus Ethernet Plus Adapter board and Western Digital Corp.'s EtherCard Plus. In the second quarter of this year, Torus plans to make the option available for any Ethernet adapter that provides a media access control-layer interface. Tapestry II LAN Manager runs on any IBM Network Basic I/O System-compatible local network.

Sold as an add-on package to Tapestry II LAN Manager, NetWare Integration Option costs $295 and is available now for the Torus and Western Digital adapter cards.

Torus Systems, Inc., 240 B Twin Dolphin Drive, Redwood City, Calif. 94065, or call (415) 594-9336.

Prime tool helps users build X.400 applications

By Jim Brown
New Products Editor

NATICK, Mass. — Prime Computer, Inc. recently unveiled a software tool that will help developers build X.400 electronic mail applications for its 50 Series superminicomputers.

With the X.400 Application Programming Interface (API) Development Kit, large end users and software development firms can build X.400 applications and gateways that link proprietary Prime E-mail systems with X.400 software running on other vendors' equipment.

The X.400 API Development Kit runs under Prime's Primos Version 21 or later operating system. The software can be used to build a gateway from an existing proprietary Prime E-mail package to the new X.400-based E-mail application.

The X.400 API Development Kit is limited in that it is not intended to enable programmers to build gateways between a proprietary E-mail system running on another vendor's equipment and an X.400 application running on a Prime system.

The X.400 API Development Kit supports X.400's message transfer agent. The agent uses the international messaging standard to route E-mail via a network to X.400 applications running on other systems.

By embedding API calls in applications running on a Prime system, programmers can instruct the message transfer agent to send an E-mail message to remote users.

The development software enables programmers to take advantage of most of the 50 features and functions included in the X.400 standard, while other vendors' X.400 software supports only a few of those functions, a spokesman said.

The Prime software will automatically identify the format of a file being sent as part of an X.400 E-mail message. The software then instructs the receiving system to expect a message supporting that file format, which could be a binary file or a facsimile image, for example.

Some current X.400 installations receive messages but rely on additional file format-conversion routines to restructure incoming messages into a generic format.

Prime said it will release this year X.400 software that runs over Ethernet local networks. The current version communicates over X.25 nets as well as over Prime's proprietary networking scheme.

The X.400 API Development Kit is available now for a license fee of $350,000.

Alternatively, customers can acquire the software for an initial license fee of $150,000 and pay subsequent license charges of between $1,000 and $4,000 for each system on which the software will run.

Prime can be reached by writing to Prime Park, Natick, Mass. 01760, or by calling (508) 655-8000.

Teleos unveils switch simulator

continued from page 17

from one board to another.

The ISDN Adjunct Processor supports protocol conversion, which allows ISDN equipment made by different vendors to communicate. It also supports ISDN telephone sets and ISDN terminal adapters made by a number of different vendors.

A typical configuration that includes the six-board slot ISDN Adjunct Processor, four Basic Rate Interface Units, one Primary Rate Interface Unit and operating system software is priced at $17,400.

Teleos can be reached by writing to 2 Meridian Road, Eatontown, N.J. 07724, or by calling (201) 389-5700.

Pack lets servers use TCP/IP, LAT

continued from page 17

with 256K bytes of random-access memory, LINC/Term supports 16 host sessions. Running on terminal servers with 512K bytes of RAM, the software supports 24 sessions. Each terminal or personal computer attached to the terminal server can create up to four concurrent sessions.

LINC/LAT enables those devices to communicate with DEC VAX and MicroVAX computers, terminal servers and other hosts that support DEC's LAT protocol and are attached to the same local network.

LINC/LAT software is embedded on Sytek's LocalNet 4140 Ethernet Network Adapter Card and LocalNet 6120 and 6130 Broadband Network Adapter Cards, which can be installed in DOS-based personal computers.

A personal computer running LINC/LAT must also run Sytek's LINC/PC software. Used with LINC/PC, LINC/LAT supports file transfers between the personal computer and LAT-compatible hosts.

LINC/LAT also works with personal computer-based third-party terminal-emulation software supporting VT-100 or VT-220 terminal emulation. Lastly, it can work in conjunction with Novell, Inc.'s Advanced NetWare Version 2.0a and Version 2.12 software.

LINC/Term software is priced on a per-server basis. The fee ranges from $250 for one server to as low as $50 per server in multiple-server arrangements. LINC/LAT costs $199 per copy.

Broadband servers bow

Sytek also expanded its terminal server line with the introduction of its 2208 Broadband Terminal Server and 2296 Modular Broadband Terminal Server. The company previously offered baseband servers only. Both terminal servers use the carrier-sense multiple access with collision detection Ethernet standard.

The 2208 supports a maximum of eight asynchronous connections. Users attach ASCII asynchronous devices, including terminals and personal computers, to the 2208 via RJ-45 connectors.

The 2296 comes in a minimum configuration of 32 ports and can be expanded to 96 by adding Asynchronous Interface Modules (AIM). Each AIM supports eight ports. Users can attach devices to the 2296 via RJ-45 or 50-pin telephone connectors.

Both new servers attach to the broadband network via an internal 2M bit/sec broadband modem board that supports four different frequencies. The modems are compatible with Sytek's 6120 and 6130 Broadband Network Adapter and 8050 broadband bridge. Both also work with Sytek's 6052 or 6053 broadband network head-end remodulators.

Up to 1,000 2208s or 2296s can transmit on the same broadband network channel. A maximum of 3,000 2208s or 2296s can be attached to the same broadband network.

Pricing

The eight-port 2208 costs $2,995. A 32-port 2296 costs $10,350, while each AIM costs $1,600. Both broadband terminal servers are scheduled to ship later this month.

Sytek, Inc. can be reached at 1225 Charleston Road, Mountain View, Calif. 94043, or call (415) 966-7300.

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OPINIONS

ISDN

BY JAMES CARLINI

Be realistic about ISDN and stop 'Kramdenizing'

Remember how in the old Jackie Gleason series, "The Honeymooners," Ralph Kramden was always scheming to make a million dollars on something, such as hors d'oeuvres that were really made of dog food or a kitchen utensil that could do everything? Good old Ralph was "Kramdenizing" — that's when you have a farfetched idea to make a bundle overnight. There's a little bit of Kramdenizing going on in the minds of vendors and users who are trying to justify Integrated Services Digital Networks prematurely.

When you ask vendors about time frames for equipping central offices to handle ISDN, many don't have any detailed information. According to a network engineer at Illinois Bell Telephone Co., Illinois Bell will have only 20 unspecified central offices upgraded to ISDN across the state by the beginning of 1990. The engineer also notes that, while residential customers and small businesses that need data capabilities initially may be quick to buy ISDN, large companies will not be running to install equipment adhering to ISDN standards for another five to seven years, especially when ISDN terminal adapters have a $1,000 list price. Furthermore, the cost of ISDN may keep it from ever reaching rural areas.

> It will be a while before users can say, "ISDN, you're the greatest!"
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Another question is, what about Signaling System 7 (SS7)? SS7 can provide call wake-up, automatic number identification, selective call denial and other custom calling features that are not currently tariffed. However, some regulatory issues must be resolved before these services become available. The local exchanges must obtain permission to create and provide data bases for these enhanced services, and the question of who should be billed for a completed call must be addressed.

Some long-distance companies are planning to support ISDN within the next year. MidAmerican Long Distance Co. in Omaha, Neb., currently has SS7 capability throughout its network, as do Rochester Telephone Corp. and US Sprint Communications Co. ISDN's SS7 protocol provides these companies with faster call setups and substantial decreases in certain network costs.

ISDN is feasible on an interlocal access and transport area basis only if the SS7 capability is interfaced between the local exchange and the long-distance carrier. Until the local exchanges get permission from the Federal Communications Commission or their state public utility commissions — or both — to provide enhanced, data base-driven services, they are going to drag their feet in implementing SS7. The local exchanges will not respond quickly to the demands of long-haul companies, which can save a lot on access charges if their call setups are shortened. The exchanges will provide SS7 interfaces to the carriers only if everyone gets a piece of the pie.

Another area to examine is the installation of SS7 in central offices. Currently, if you are in an area served by an ISDN-equipped central office, you can make ISDN calls to anyone in the central office that has the service. However, if you call outside the area, you can only connect to those offices that also support ISDN with the SS7 signaling protocol.

Until SS7 is installed in all central offices, interfaces are implemented between the local exchanges and the long-distance carriers and ISDN becomes a more ubiquitous service, it will be a while before users can say, "ISDN, you're the greatest!"

Carlini is president of Carlini & Associates, Inc., a management consulting firm in Hinsdale, Ill. He also lectures on information technology at Northwestern University in Evanston, Ill.

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EDITORIAL

As the saying goes, 'Nothing endures but change'

Yesterday marked the fifth anniversary of the divestiture of AT&T. Although it would be nice to package up that half-decade and file it away as an overly taxing period that is gone and best forgotten, the fact remains that the future doesn't look any more serene.

Practically every facet of the complex information-processing and networking industry is in flux. Besides the turmoil in the telecommunications industry — characterized by pitched marketing battles and high-stakes acquisitions — the data network business also continues to grow more complex.

As Robert Metcalfe, general manager of 3Com Corp.'s distributed systems division, says, "We have MAP/TOP, [the Corporation for Open Systems, the International Standards Organization], ANSI, the National Bureau of Standards, X/Open, [the Open Software Foundation], OSI/Network Management and [the Network Computing Forum] . . . We've created this incredible tangle of organizations that no one can understand."

The only given for 1989 is that there will be more change with which to contend.

In telecommunications, Integrated Services Digital Network advances will be in the news throughout the year, but the more important trend to watch will be the changing fortunes of the major long-haul carriers.

As we edge closer to true competition, long-haul carriers will begin to bend over backwards for business, and large contracts will begin to change hands. Carriers will try to gain and retain customers with innovative contracts — such as AT&T's controversial Tariff 12 and Tariff 15 offerings — and try to get a leg up on competitors by fielding new types of services. Industry shifts will result in more mergers and acquisitions before the year is out.

In terms of data networking,

> "We've created an incredible tangle of organizations that no one can understand," 3Com's Robert Metcalfe says.
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the most significant development will be the continued advancement of network standards that address multivendor networking.

Last September, IBM announced its first Open Systems Interconnection products targeted at the domestic market. This endorsement — combined with the approval of the Government OSI Profile, a procurement stipulation requiring adoption of OSI — gives the open systems movement a significant boost.

Although in their efforts to adopt standards, vendor and user communities alike must struggle with a morass of standards bodies, vendor associations and political groups, the whole movement is in full gear and public awareness of the effort is at an all-time high. In 1989, we can expect to see more off-the-shelf network products that support standards.

But don't be surprised if Transmission Control Protocol/Internet Protocol gains more momentum as an interim alternative to OSI. TCP/IP continues to gain ground, contrary to the conventional wisdom that interest in it will wane in 1989 as interest in OSI ramps up.

Besides the traditional stronghold TCP/IP has in the academic and government sectors, businesses are beginning to recognize the protocol's merits. That interest, in fact, forced IBM's hand last September. Big Blue knuckled down and announced TCP/IP support for its major operating systems when it rolled out its domestic OSI products.

Watching the telecommunications market writhe and standards coalesce can't prepare us for all the changes the new year will bring, but solace can be found in the fact that the market is working for the user. Telecommunications competition and data networking standards will pay dividends in increased options and lower costs.

By the time the 10th anniversary of divestiture rolls around, maybe we can cut back on the endless rehashing of that event and look forward to a more user-friendly environment.

OPINIONS

THE RBHCs

BY HENRY LEVINE

What's not open and doesn't involve architecture?

The Federal Communications Commission has announced its long-awaited response to the Open Network Architecture (ONA) plans filed by the regional Bell holding companies this past February.

Of the key issues to be resolved, the most important concerned ONA service structure and pricing. The new order addresses both. But, as is so often the case in Washington, D.C., there is good and bad news.

First the bad news

Whatever ONA does, it will not (if the FCC's decision sticks) include anything that opens the architecture of the network.

The RBHCs first proposed ONA (yes, it was their idea) as one of several safeguards that would permit lifting the current requirement that they provide enhanced services through separate subsidiaries.

As envisioned in their 1985 filings, basic service would be broken down into "primitive" network functions sold separately to enhanced service providers so they could choose the elements they desired, combine them with offerings of their own and provide enhanced services to the public. The Department of Justice endorsed the concept, and the FCC adopted it, ordering the RBHCs to unbundle basic services into "building blocks."

Unbundling basic services, however, conflicts with one of the foundations of the "Telco Creed," that is, the network is the solution and the telephone company must retain end-to-end control of it. In their February filings, the RBHCs abandoned the open vision they had offered to the FCC in favor of a more traditional and (to them) acceptable construct.

The basic service elements (BSE) that were supposed to be building blocks have been transformed into optional add-ons (much like custom calling features). Enhanced service providers and users will be permitted to buy BSEs in addition to — not in lieu of — end-to-end services, now renamed basic service arrangements (BSA). In the RBHCs' "Common ONA Model," ONA is not open and has nothing to do with architecture.

Users, enhanced service providers, interexchange carriers and even such neutral observers as the National Telecommunications and Information Administration were appalled.

What made the original version of ONA attractive to the industry was the flexibility it promised: the prospect that service providers could treat a service in a manner analogous to custom-building a car — buying an engine or drive train, adding their own transmission, sheet metal and controls, and driving away a new vehicle.

However, as envisioned by the Baby Bells, today's version of ONA was to be little more than customized wheel covers and upholstery on an RBHC sedan. There is a big difference.

In its recent order, the FCC accepted the RBHC model, essentially reversing its previous decision to require the unbundling of basic services. While that doesn't make ONA unimportant, it robs it of much promise and is a setback for efforts to make the public switched network a true utility.

Perhaps most important, by entrenching the Bell operating company local access bottleneck, it undercuts efforts to free the BOCs from regulatory and line-of-business restrictions. It also encourages users and enhanced service providers to develop alternatives to the public switched network for access to information services.

Now the good news

Despite confusion at the FCC and in the press, the FCC appears to be determined to avoid imposing, or allowing the RBHCs to impose, the burden of uneconomical cross-subsidies on enhanced service providers.

The FCC reaffirmed its intention not to subject the industry to carrier common line charges, slapped down Bell South Corp.'s efforts to force the enhanced service providers to give up state access lines and will require federal tariffing of BSAs and BSEs.

Dual federal and state tariffing — included in Ameritech's plan but rejected by most of its siblings — is especially important. There will be no further preemption of state regulation by the FCC in this area; but even without it, federal tariffs will be a model that most states will follow, at least in part.

Cost-based federal rates will be an important check on RBHC efforts to use their market power to obtain monopoly rents from enhanced service providers at the state level. The result should be earlier deployment of a greater variety of enhanced services at lower prices.

There is, of course, more to the FCC's order than structure and pricing. As part of a general exhortation to provide greater technical and structural uniformity, the FCC endorsed the RBHC-organized Information Industry Liaison Committee.

The committee may prove truly valuable only if the FCC's endorsement is accompanied by pressure on the RBHCs to allow substantive discussion of the major policy issues they have kept off the agenda to date.

In its relations with the states, the FCC invoked section 410(d) of the Communications Act of 1934, which provides for joint conferences of state and federal regulators.

That can't hurt, and in combination with federal tariffing of interstate BSEs and BSAs, it should help to produce something like what we have in the carrier access and cellular areas — a uniform national structure, with prices and other details that differ across jurisdictions.

Squabbling between the FCC and local public utility commissions over ONA has taken too much time and energy; the FCC's olive branch is most welcome.

The tale of ONA has a long way to go before the parties involved live happily ever after. If there is a bottom line to the FCC's recent order, it is that ONA will not be the technical and regulatory revolution anticipated by some and feared by others.

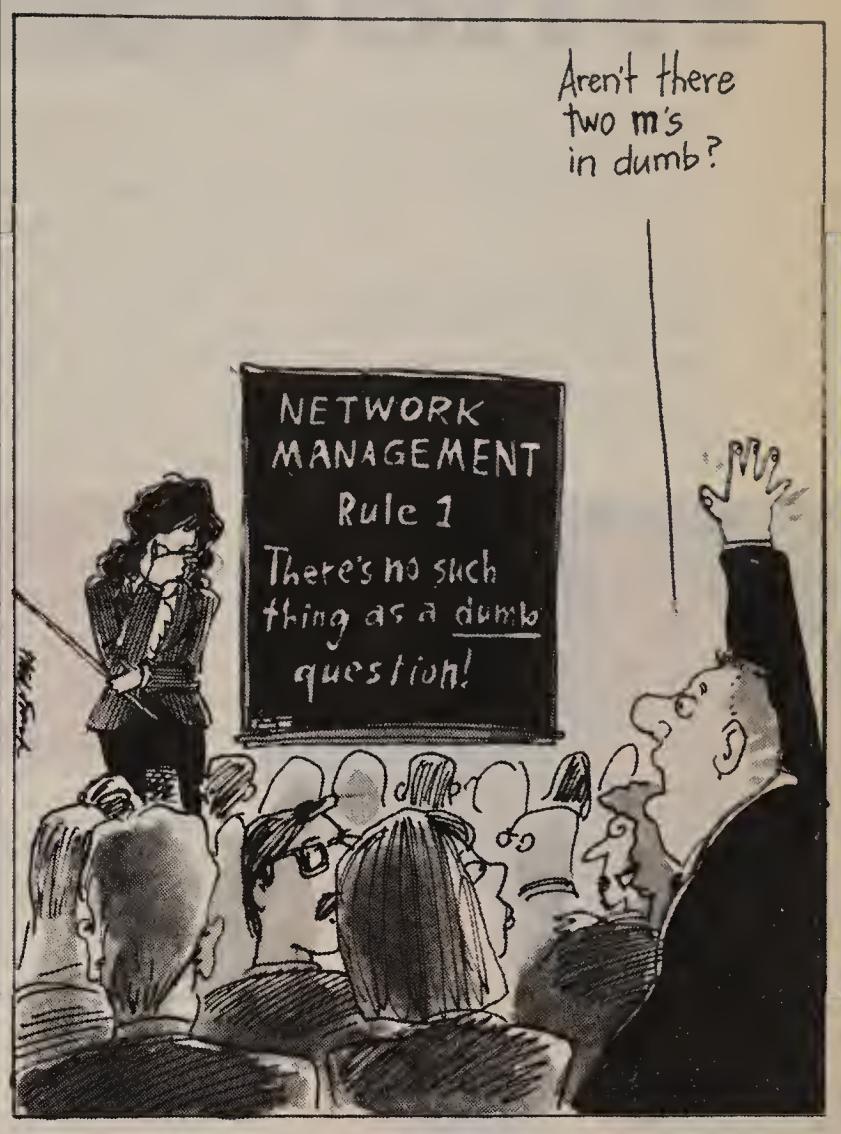
Instead, it will be an incremental program that encourages the RBHCs to make available new features of special interest to enhanced service providers and large users in a timely, cost-based and nondiscriminatory manner. In exchange, the RBHCs will be allowed to offer information services directly (as and when U.S. District Court Judge Harold Greene permits).

The fight to control the shape of the public switched net and the services delivered through it will be fought elsewhere.

Levine is a partner in the Washington, D.C. office of the law firm of Morrison & Foerster, where he chairs the firm's communications group. The opinions expressed are not necessarily those of the firm.

TELETOONS

BY FRANK AND TROISE



LETTERS

Byte your tongue

The computing world learned an interesting, and humbling, lesson from last month's virus episode. The network computing high priests sitting about trying to eradicate the virus fell victim to their own reliance on computing technology at the expense of voice telecom.

The revelation that network computing users lost valuable time fighting the virus during the early hours of its detection because of their inability to communicate was a shocker. And why couldn't they communicate? Because all of their past links had been handled electronically over the same contaminated networks. Most users of the infected networks had only the electronic mail addresses of their peers — they had no telephone numbers for their colleagues or any easy way of reaching them!

The next time a computer maven talks about "illiterates" or pooh-poohs the telecom business, maybe someone should point out how this virus episode underscores the problems such mavens seem to have interfacing with that complex voice-only information I/O device, also known as the basic 2500 telephone set.

Peter Bernstein
Senior analyst
Probe Research, Inc.
Cedar Knolls, N.J.

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Letters may be edited for space and clarity.

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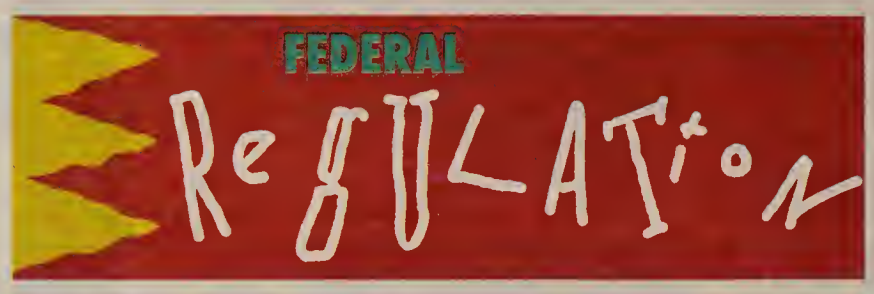
What's in the cards

To find out what we can expect in 1989, *Network World* went right to the source: our readers. We asked users, consultants and vendors to identify important industry trends and to predict what will be happening in the areas of federal regulation, Open Systems Interconnection, T-1, local- and wide-area network integration, Integrated Services Digital Network and messaging.



Industry experts look at the year to come.

Alan Pearce, president, Information Age Economics, Washington, D.C.

First, four new Federal Communications Commissioners — out of five on the commission — will be named in 1989, including a new chairman.

Second, the Department of Justice will rigidly enforce the Modified Final Judgment in 1989 and will begin to prepare the second triennial report for [U.S. District Court] Judge [Harold] Greene [due in 1990].

Third, Judge Greene will continue to rigidly enforce the MFJ. There will be no letup: He will continue to be relentless and vigilant.

There will be more interest in antitrust violations and enforcement by Capitol Hill. It will be an effect of the new Congress more than of the new administration in the White House. I think the Bush administration will play by and enforce the rules, rather than ignore them, as the Reagan administration did.

Page Montgomery, vice-president, Economics and Technology, Inc., Boston.

The year 1989 is going to be a period of some consolidation. In the last couple of years, a lot of initiatives have opened up — changes in the MFJ, price caps, [Open Network Architecture]. It is going to be a time when some of these things get polished or get worked up in a way that makes them more useful. That's not an easy step to take.

I don't know if "pro-regulatory" is the right term. In the last few years, we have seen an environment that is strongly predisposed against regulation.

What I think you'll see in 1989 is as much interest in deregulation — where it's appropriate — as there has been in the last few years, but people will get there by working through the numbers, moving a step at a time rather than saying, 'We have to do this just because it's there.'

For example, [regulators] will take the concept of ONA but make sure that it's as uniform as possible throughout the country and that the pricing rules are not monopolistic, and they'll do that step-by-step to get it done right. And it'll be worth it.

John Compitello, vice-president of telecommunications, Irving Trust Co., New York.

We're going to see ONA happening in Florida, California and New York, and the regional [Bell] holding companies in those areas and maybe other states getting very active in the ONA world. Part of that is federal progress in ONA, and part of it is the regional [Bell] holding companies pushing for it to happen.

The federal side is slowing down, awaiting the change of the guard and wondering how it's going to affect the head of the FCC and the commissioners. We could very well get a new chairman; we've been through this every four years or so, whenever a new president comes in. There's always stagnation at the end of the year and in the first quarter of the new presidency.

Judge Greene is going to hang tough until the regional [Bell] holding companies prove that they don't have the total bottleneck control that they currently have. He's not going to let them [completely enter] the information services business until that happens.

That's why the smart regional

(continued on page 25)

T-1

David Marble, consultant, Vertical Systems, Inc., Dedham, Mass.

T-3 will become a little bit more readily available in 1989 in that the T-1 companies are certainly looking to take advantage of T-3 applications and are looking toward what their strategies will be in the T-3 environment.

We also see T-1 multiplexer vendors trying to understand and get their strategy together for local-area network interfaces. In 1989, the T-1 multiplexer vendors will learn about the LAN interconnect market and try to develop their strategies for that. We believe that it will be a slow evolution toward some synergy between the LAN and WAN market, rather than a sudden T-1 vendor agreement with a LAN interconnect vendor. More needs to be done between those environments from a corporate culture standpoint and from a technical standpoint. The typical LAN vendors and LAN interconnect vendors don't necessarily understand the wide-area network. The users want [interconnection with T-1]. The T-1 and LAN vendors don't necessarily understand one another's businesses.

The other topic I think is important for 1989 is that the carriers, the RBHCs, the interexchanges and so on are going to be putting together their strategies for providing private network-like services in the central offices. Carriers are looking at fractional T-1 services so that you only pay for a chunk of the T-1, but they're also looking at providing intelligence in the [central office] to manage and control that T-1 or that backbone network.

Michael Moisan, senior communications network analyst, Information and Communication Systems, Inc., a division of Carson Pirie Scott & Co., Chicago.

I see the T-1 multiplexer industry becoming very selective about what it will be implementing and researching and developing. There will be only a select few T-1 multiplexer vendors. Many have tried, and most have failed, to develop an effective T-1 multiplexer. There are only about four companies, maybe five, that have a truly effective T-1 multi-

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OSI ISSUES

James Herman, consultant on telecommunications technology, Cambridge, Mass.

The most interesting thing to watch in this area will not be in networking; it will be Unix. It could be a very important year for the beginning of the move away from proprietary operating system bases to a vendor-independent Unix base.

That has consequences for networking. I think organizations are going to develop an open systems approach in conjunction with an open computing base approach. All the work has been done in OSI. We know, really, what the answers are. It's just going to take us a number of years to get there.

I think users have to signal whether they're really committed to the open systems approach or whether they are going to feel more comfortable with vendor-proprietary approaches. I think that we'll see signals about that direction by looking at where Unix goes next year.

The big issue right now is this split in the Unix world between AT&T and the Open Software Foundation. I think we're going to see a resolution. We're going to see whether the Unix world is going to have two forks or one. And that'll make a big difference.

A. Lyman Chapin, senior consulting engineer, Data General Corp., Westborough, Mass.; chairman of ANSI Task Group for Network and Transport Layers of OSI (X3S3.3).

I think the most important thing that's going to happen next year is that we're going to see the first commercially available products that have been through [Corporation for Open Systems] testing. That's going to overshadow any other news that comes out next year.

By far, the most important question in this area is 'Is OSI going to be real?' The first COS-tested products will answer that question.

What will really start things going is when people start to see not only that vendors have products but that they're serious enough to go through what is really a very painful process: the COS testing and certification. It

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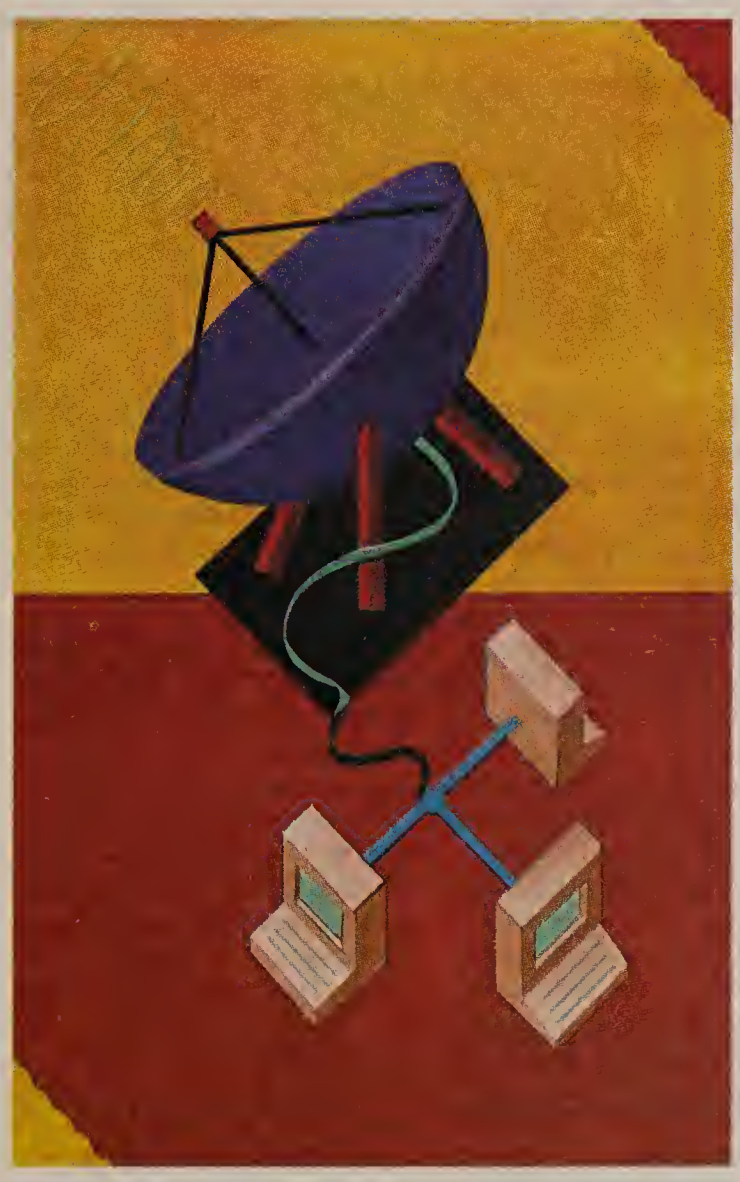

LAN~WAN INTEGRATION

Dick Meese, president, Banyan Systems, Inc., Westborough, Mass.

The growth that we see [in connecting local nets over a wide area] has been higher in what we would call enterprisewide or corporatewide networking, where dispersed local-area networks are put in networking operating systems and connected via wide-area networking to their hosts, whether they be minis or mainframes. We feel that is the fastest-growing segment of the market.

Everybody's always said that the last couple of years were supposed to be the year of the LAN. I think we're in the decade of the LAN. From what we see, I think that it's going to continue to grow; the business expansion in this segment of the market is going to continue. We haven't seen any reason for concern.

Ed Ward, network services manager, American Management Systems, Inc., Arlington, Va.

I don't see a whole lot of growth in [local- and wide-area network integration]. I think there are some specific instances, but they seem to serve dissimilar

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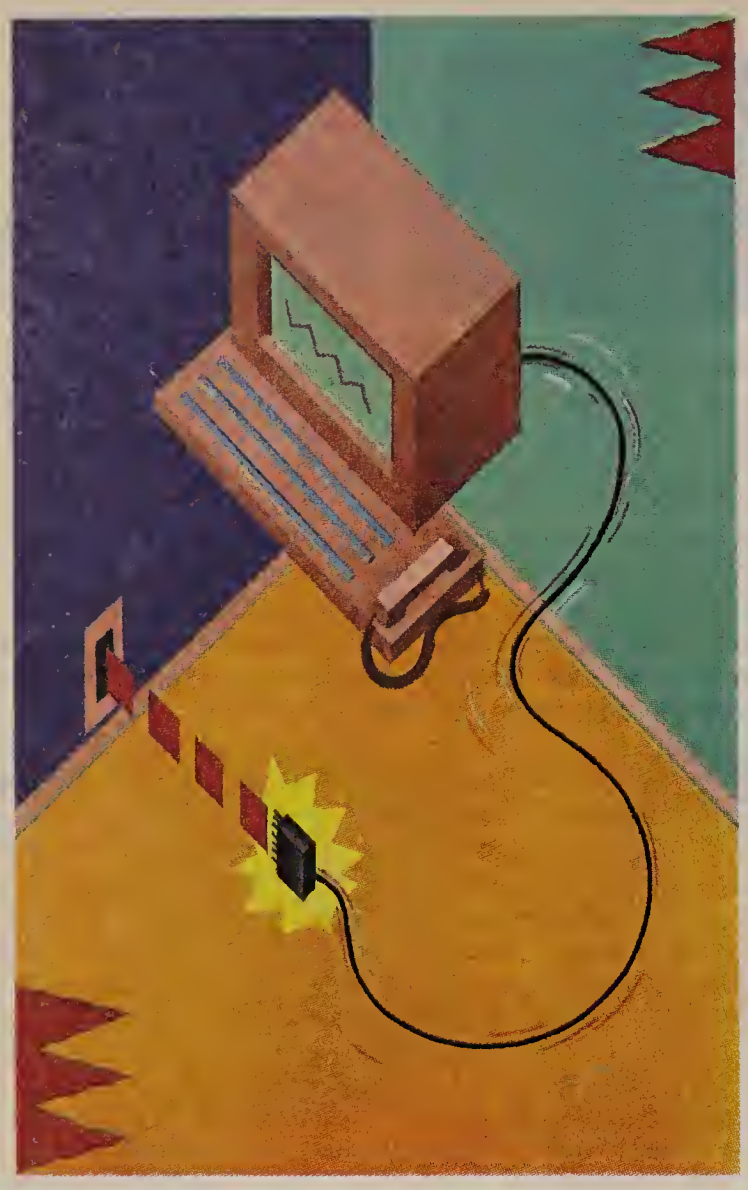

ISDN

Gevenie Delsol, director of corporate telecommunications, Levi Strauss & Co., San Francisco.

For me, the issues from Levi's perspective are still evaluating the service — the cost of ISDN vs. the function that we receive from it. It still has a way to go for us.

One application, however, that does have merit for us is in the telemarketing area, and we are going to do a pilot of that next year. That's the automatic number identification application. And especially with the announcement that they're going to move forward more aggressively on adding cities — that makes it very attractive.

For us, basically, it's the price [of ISDN] vs. the value that it will bring to the company.

Jack Grubman, first vice-president, PaineWebber, Inc., New York.

The big topic will be further rollout of the Primary Rate Interface by AT&T. More services, or applications, such as call-by-call and automatic number identification, will be hung off the [Primary Rate Interface] by AT&T. I assume there will probably be three or four more like that.

There will be more ubiquity. Sixty-six cities are better than 18. And there probably will be more paying customers — right now there are two or three, and AT&T supposedly has 150 in the queue.

The year 1989 will be the dawn of the ISDN era. It will be the year when people realize that ISDN is a real live revenue-producing umbrella of services and not some vaporware acronym. And that's going to be significant. A lot of the technical details are beginning to be hammered out and, at the same time, services are being hung off of this umbrella. In 1989, ISDN will become a real business — off the drawing boards and into the marketplace.

Richard Jenifer, president of National Centrex Users Group; telecommunications specialist, CNA Insurance Co., Chicago.

ISDN will come out of the woodwork, and some definitions will be wrapped around it. In 1990 and '91, users will begin to pick up on the use of ISDN as a product or concept.

The one area everyone is waiting for is the Signalling System 7 technology that's supposed to be released as part of ISDN. The word is that it should be released late next year some time.

One of the big things that most of the users I talk to really have a problem grappling with is putting some applications around ISDN. Most of the things that people say ISDN will make available are already available in some form.

So it's a matter of taking that scattered technology and bringing it together. That's why I say the next two years are going to be

ELECTRONIC Messaging

Nina Burns, senior analyst and vice-president, Infonetics, Inc., Santa Clara, Calif.

Vendors have made commitments to X.400 in 1988, so we're going to see more gateways and ways of interconnecting various electronic-messaging systems through gateways to X.400.

There are going to be some interesting interconnections between voice messaging and electronic messaging. Companies like Pacific Bell will lead that effort. They are doing interesting things there and are probably going to have an impact on the market.

PC LANs are really going to have an effect on the growth of electronic mail because there are so many more users on PC LANs than there are on any other kind of system. All of the PC LAN vendors are now beginning to take mail seriously and incorporate it into their LAN platforms.

So you're going to have more of a critical mass of electronic mail users who will start to demand interconnectivity between electronic mail systems. That will also drive the trend toward X.400 as the backbone message system.

Michael F. Cavanagh, executive director, Electronic Mail Association, Washington, D.C.

The growth of electronic mail is going to continue and escalate. There are about six million people using computer-based messaging right now.

Interconnection continues to be a key element of what the industry is doing. X.400 is the glue that will hold all of this together. We're very bullish on X.400 and see it really sweeping the worldwide industry.

We'll see a continuation of the important trend of various intracompany-messaging systems interconnecting with public services — you know, the 80,000 people at [E.I.] du Pont [de Nemours & Co.] or the 20,000 people at Company X and the 30,000 people at Company Y will be hooking onto public services — and the discussions of moving toward interconnection of public services will escalate.

In 1989, we will see the first RBHC electronic-messaging system rolled out. Pacific Bell is on our board of directors, and they're going to be introducing their product in the commercial marketplace in the middle of 1989. So that's certainly an interesting development.

We will see the rollout at some point of the Bell Atlantic [Corp.] electronic-messaging code using a different concept: They're in essence going to be reselling telemail.

There'll be a serious start toward looking into the worldwide directory issues — that's the X.500 work that's being done and certainly that's important for the long-range future of real worldwide messaging.

Eric Arnum, editor, "Electronic Mail and Micro Systems" newsletter, New Canaan, Conn.

If you look at all the areas [of electronic messaging], you see they're all proceeding at different rates. At least one — telex — is in decline; [electronic data interchange] is really going forward; voice mail, even without the telephone companies, has had a good growth rate. Now that the telephone companies are getting into it in a very big way, I would expect that will be the success story of the next year or two.

The Bell operating companies are organizing the gab lines — the voice information services — into gateway services. They're publishing directories. They're saying, 'Buy Touch-Tone service, and you will get this.' The Bell operating companies are organizing and shepherding the voice information services industry now, and you will see gateways very soon for voice.

In EDI, there's quite a bit of competition, and I've yet to determine whether the customer base and the traffic volume will increase fast enough to offset declining prices.

I would say that, from a user point of view, there will be much more activity, many more people to send and receive documents with, and you'll be doing so more often.

Of the statistics that I track, the traffic volume of electronic mail has been increasing the fastest. What's encouraging is that the traffic is increasing faster

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when the applications will be developed.

Richard Villars, industry analyst, International Data Corp., Framingham, Mass.

The major issue for the coming year is going to be applications. Vendors will start delivering specific application packages. I don't believe that any will be delivered in '89, but vendors will start announcing the products in '89.

At this point, just because of the way ISDN is set up, prices for services are not always driven by availability of applications; I believe it's driven more by the ability to convert people over to ISDN. That will influence the pricing. I don't think price will be driven by application until probably the '90s.

The [North American ISDN Users'] Forum is going to provide vendors with a base, but most of it will actually be driven by that specific vendor's customer requirements and how they can best tie that into their currently installed systems.

The forum may give them some general guidelines, but it's really what their own individual customers are going to demand.

Peter Bernstein, senior analyst, Probe Research, Inc., Cedar Knolls, N.J.

First of all, we're going to see tariffs from almost all the regional [Bell] holding companies, certainly for Basic Rate Interface and possibly for Primary Rate. That's No. 1.

No. 2, we'll get out of the trial mode and into a commercial rollout mode, although the concentration on those who will be using it will still be basically Centrex-based.

On the CPE side, most of the switch vendors are going to make Basic Rate Interface available behind their switches so that other vendors' products can be attached.

Also, '89 is clearly going to be the year of applications development. You have all the work that's going on with the NIU Forum. Admittedly, that could turn into a time-consuming process, but they will come out with at least some basic ISDN supplementary services.

Jim Herman, independent consultant, Cambridge, Mass.

Next year should see the first products to come out that really adhere to the standards. That will be an important milestone for ISDN. We will begin to see a fairly rapid introduction of ISDN services from the Bell operating companies and possibly from MCI.

It's still doubtful that there will be much user enthusiasm for ISDN in '89. It's going to take another year before we see significant investments in ISDN by the users. These things always take a long time. Look at the histories of other kinds of technologies, such as X.25. The first X.25 standard was ratified in '76. But X.25 did not really become popular and widely used, especially in the commercial world, until about '81 or '82.

My prediction is that in '90 to '91 we will start to see significant purchases of ISDN equipment. I will be interested to see if there's a lot of user activity in '89, but my guess is that there won't be. There will still be much more vendor and carrier activity than user activity.

The NIU Forum is a bit cacophonous at this point. There are a lot of voices talking about what they're interested in, but whether it all will settle down isn't clear yet.

OSI issues

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takes a lot of money and sweat to do this.

Paul Luebbe, technical director, Omnicom, Inc., Vienna, Va.

The momentum will start snowballing in the third and fourth quarters of 1989 for OSI products. I think the standards are moving in the right direction.

However, the application of OSI management, network management and telecommunications network management is very misunderstood within the industry. Most of what I read is not quite on the mark; there are some real fundamental issues that just don't seem to be grasped. The three are closely enough related that people use the terms so loosely. They're not all the same thing.

Scott Helmers, COS Network Management Subcommittee member and product line manager of network and system management, Wang Laboratories, Inc., Lowell, Mass.

The work going on for OSI network management is sufficiently behind the curve of the work going on for OSI in general that most of the discussion still will be vendor-centered or vendor-originated, at least for the next 12 months.

If you ask 10 people in a room what 'network management' means, you're bound to get at least 11 answers. If you chose to write about nothing but network management for the next 12 months, you'd have no shortage of material. But I think we'll start to see at least a better focus a year from now.

There will continue to be vendors who claim to have that one solution for [multivendor] network and system management problems — the one point from which all elements of the network can be managed. But I don't honestly believe that, 12 months from now, users will see a significant difference in their ability to use one product to manage 27 different vendors.

Also, it's not clear to me whether the [OSI/Network Management] Forum can succeed in its goals, partly because many of the people who are involved now in the OSI/NM Forum also have been working very actively in the OSI standards committees. They can't do both things at once. There has to be some trade-off.

In 1989, either the OSI/NM Forum will provide the kinds of functions it was envisioned to provide or it will slowly wither. I'd like to see the former happen.

John Miller, president, OSI/NM Forum; director of network management market planning, AT&T, Basking Ridge, N.J.

We have begun work on the protocol stack details — implementation specifications — for OSI-based network management and have begun work on fault-configuration messages to write on that stack, and we'll certainly be closing on that work and voting it into agreement in 1989.

I expect several things to happen in 1989. The major one [will be] to have a [network management] protocol suite established with implementation detailed. And that's really what our contribution is: to take these international standards and maybe fill in a hole or two but essentially use what's there.

What we are producing is a set of documentation — a set of implementation specifications — that'll be open to the industry in general. We are trying to create an infrastructure in the industry so that there is a way of communicating information between two management systems from different vendors.

I think it will be 1990 before the actual products start popping up and doing something useful for customers. But we cannot get to that goal without taking this first step of making the specs available so that vendors can do this development.

> "If you ask 10 people in a room what 'network management' means, you're bound to get at least 11 answers."
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> ▲▲▲

T-1

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plexer. Some of the smaller vendors will fall by the wayside.

T-3 will become available on an individual user basis. The very large user community will start to see the benefits of the T-3 technology. I don't think that will come down to the majority of the user community for a number of years. I haven't seen much equipment to handle T-3 yet. T-3s are truly expensive, and there hasn't been the demand for them yet.

I see 1989 really bringing in some effective uses for subchannel technology. I think subchannel technology is going to open up the avenue for the smaller users to get a real flavor for high-capacity communications.

As far as network management goes, I see a move toward expert systems management for T-1, almost bordering on the edges of artificial intelligence. I see a lot of expert systems development ahead in 1989 in the area of network management.

> "We'll see more use of T-1 services for LAN interconnects."
>
> ▲▲▲

Paul Severino, president, Wellfleet Communications, Inc., Bedford, Mass.

I think what we'll probably see more of in 1989 is the use of T-1 services for LAN interconnects. As users start to connect more complex networks together, they're finding out that they need more bandwidth. It's a combination of that and the fact that T-1 lines are getting less expensive; it's becoming the medium of choice if you want to interconnect LANs. I think T-1 is going to be a big service for that in 1989 and beyond.

Bruce Smith, president, Network Equipment Technologies, Inc., Redwood City, Calif.

I think the big change that will take place in our market will be the beginning of real deployment of T-3 cross sections. T-3 will begin to be a reality and with that will come the kind of cross sections that will enable video and image to become a broader reality by 1990.

During this coming year, I think we will see significant movement toward these networks taking on more than communications functionality. The network per se will take on newer functionality and begin to subsume the local environment and wide-area environment. It will begin to interrelate more tightly with the information-processing systems that historically have been only in the MIS department.

T-1 is the WAN vehicle today. If you want to integrate WANs and LANs, and gain enterprise-wide connectivity in the wide area, you use T-1s. But the people who are at the forefront have largely solved their connectivity problems in the wide area and the local area. Now they're worried about tying these things together, and they're worried about doing applications that have higher value added, either on, through or involving the network.

Probably 1989 will be the year when you actually begin to see product introductions that make that a reality as opposed to a prognostication.

Regulation

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[Bell] holding companies are pressing for ONA. They understand that the quicker they get into the ONA world, the quicker they can say to the Justice Department, 'Hey, we're opening the gates: We're allowing for more equal access for enhanced service providers. Hence, you should now let us into the information services game fully.'

I think it's going to be a slow process, and it's not going to change until the next triennial report comes in.

Integration

continued from page 23

purposes. And even with the gluts that we're getting in fiber capacity, the DS1 and above rates are still so expensive that for LANs, they're rarely justified. The formation of LANs tends to be generated by a community of interest — people looking for a fast, inexpensive way to gain productivity — and when you start running T-1 or DS3 out to different locations, you get on an entirely different order of magnitude.

A lot of the LAN products do WAN-type connections as an afterthought; they don't seem to build that as part of their architecture.

Howard Frank, chairman, Network Management, Inc., Fairfax, Va.

The first trend I see happening in 1989 is the further development of bridges and gateways between LANs and the extension of the network management product lines of LAN vendors and WAN vendors to handle integrated environments.

The second is the growing dilemma among communications users and MIS managers about who manages LANs. Nobody's really doing the job right now and, with the increased size of LANs, there's going to be an increasing emphasis on the management and operation of these networks.

Messaging

continued from page 24

than the users are signing up, which says to me that existing users are using the technology more often.

The gateways are finally widely available for a great variety of E-mail systems. I think we'll spend the next year or two working on getting our DEC E-mail system to talk to our IBM E-mail system and getting both of them to talk to Western Union [Corp.] or Dialcom [Inc.] and at the same time getting international E-mail together and good interconnections with telex, fax and postal delivery.

Walter Ulrich, partner, Coopers & Lybrand, Houston.

We're going to see continued growth, so we're talking about an increase in the number of messages. At least one billion more electronic messages will be sent in 1989 than were sent in 1988.

There will be a strong trend toward interfacing internal corporate message systems to create an external messaging environment. Up through 1988, a lot of the focus has been on internal messaging and companies developing their internal messaging profile. I think what you'll see in 1989 is more emphasis than you've seen in the past on companies interfacing their messaging systems to other companies.

In 1988, the [RBHCs] have shown great interest [in electronic messaging] and made some initial announcements in the electronic-mail and voice-mail areas; in 1989, it's going to go from the stage of conceptualizing and announcing to the initial implementations of products and services being ordered by the [RBHCs], and the [RBHCs] are going to be positioned to play a very important role in electronic mail and voice mail. At least with voice mail, they're going to get to the consumer.

John Zuckerman, senior systems programmer, communications design, General American Life Insurance Co., St. Louis.

For voice messaging, 1989 is probably going to be the start of standardization of the protocols so that you're going to have some interexchangeability between the machines — different machines from different vendors. Notice that [the International Communications Association] brought a big thing about: There were a half dozen or more big companies that had gotten together and were actually the driving force in bringing the vendors to the table and telling them to sit down and talk about it. So I would think that the ability to interexchange messages would start to become a reality in 1989.

Jerome King, member, Audio Message Interface Standard (AMIS) User Council; manager, telecommunications applications, General Electric Co., Bridgeport, Conn.

From our perspective, there's going to be expanded, continued pressure to bring different text-mail systems together to a homogeneous directory and the ability to send messages across different boundaries so that people who are in different computing enviroments can message each other easier and work directly. It's a critical need, and I think we'll see that becoming more doable and less problematic.

In the voice-mail area, I think several things [will happen in 1989]: the vendor community will agree on the audio messaging interface specification so that we can build the fabric of products talking to each other, [and there will be] continued growth in corporate networks.

I see growth of business applications building on top of the networking capabilities so that we are able to put up distributed voice-processing applications, much as we're starting to put up distributed computing. Obviously, we'll start to see some of the telephone companies offering business-focused voice-mail services, as opposed to more residential services.

AMIS' schedule says that we will have a specification done by the April-May time frame of 1989, and we might start to see vendor products, or certainly vendor schedules, by the end of 1989.

The user population is using both types of technology and is looking toward interconnection of the two, at least to the level of message notification and envelope information. I think there will be heightened pressure for those types of links to occur. I don't anticipate any voice-to-text; text-to-voice will be limited still to rudimentary things because of the limited quality of the text-to-voice technology.

Lee Foote, manager, EDI section, E.I. du Pont de Nemours & Co., Wilmington, Del.

I see close to a vertical growth curve for electronic messaging in 1989. EDI, E-mail and fax will all have very accelerated growth next year, not only in terms of intracompany use for things like E-mail and fax but also to go from company to company. The equipment and software costs, the networks and the knowledge levels are all getting to the point where the growth is going to be explosive. We're certainly seeing all those indications right now.

Voice messaging is a real comer in several regards. The whole area of voice messaging just to replace operators of message desks is going to become a lot more prevalent. Voice recognition systems — that companies and service providers can use with their customers to get information — are going to really start to take off. There are several systems available on the market now and companies using them are very pleased with the results, not only with how they work but also because their customers appreciate that around-the-clock availability and use it.

More and more people are going to have faxes in their cars. We've seen the growth of cellular telephones. To a salesman whose car is his office, the ability to have not only a telephone but also a fax machine is something that's going to help them that much more. I think the growth of the portable fax is going to be phenomenal.

Let your budget set you free

The budget process, when approached properly, can be an important tool to get what you need for your department.

CONTINUED FROM PAGE 1
result, the manager realizes that the budget process, far from being unrewarding drudgery, offers him a creative opportunity to accomplish objectives both for his department and himself.

Fortunately for this inexperienced manager, the controller's office has defined the budget rules of the road. In addition, the controller's guidelines define corporate strategic and financial objectives.

Armed with these basics, our manager begins the budget process, realizing that the voice-mail project he has championed during the past year will be approved only if it is incorporated into the budget. He also realizes that the key to selling new programs to senior management is to shift spending to those programs from other areas of the budget.

After several discussions with his financial analyst and the controller's office, the manager is certain that upper management will back his voice mail project if he can substantially cover its cost within his spending guidelines.

If he cannot shift spending enough to fund his programs completely, he may have to generate revenue by starting programs to make the telecommunications operation a profit center.

Assumptions

The primary objective of the budget process is to create an operational department plan that meets corporate financial goals and provides for necessary service to support the company's business plan. The controller's office provides a list of basic assumptions along with the strategic business plan.

The financial rule of thumb for this exercise is no real budget growth, while the corporate business plan calls for substantial movement of personnel and enhanced productivity programs (for example, establishment of a field engineering hot line and central technician dispatch).

The manager first meets with the vice-president of field engineering to establish the support requirements for dispatch consolidation. He then meets with the director of facilities to develop a list of major and minor personnel relocations. Each move is analyzed to determine if recabling will be necessary.

The manager also meets with the director of human resources to compile head-count changes within each corporate facility for the coming fiscal year. The manager and his staff then update the communications system inventories and capacity plans.

The staff compiles the key plan assumptions and a report of the systems' ability to provide service. They develop an estimate of materials needed over and above current inventory levels, along with an estimate of the vendor labor needed to expand

(continued on page 36)

Fletscher is director of telecommunications for FMS Telecommunications, Inc. in Wellesley, Mass.

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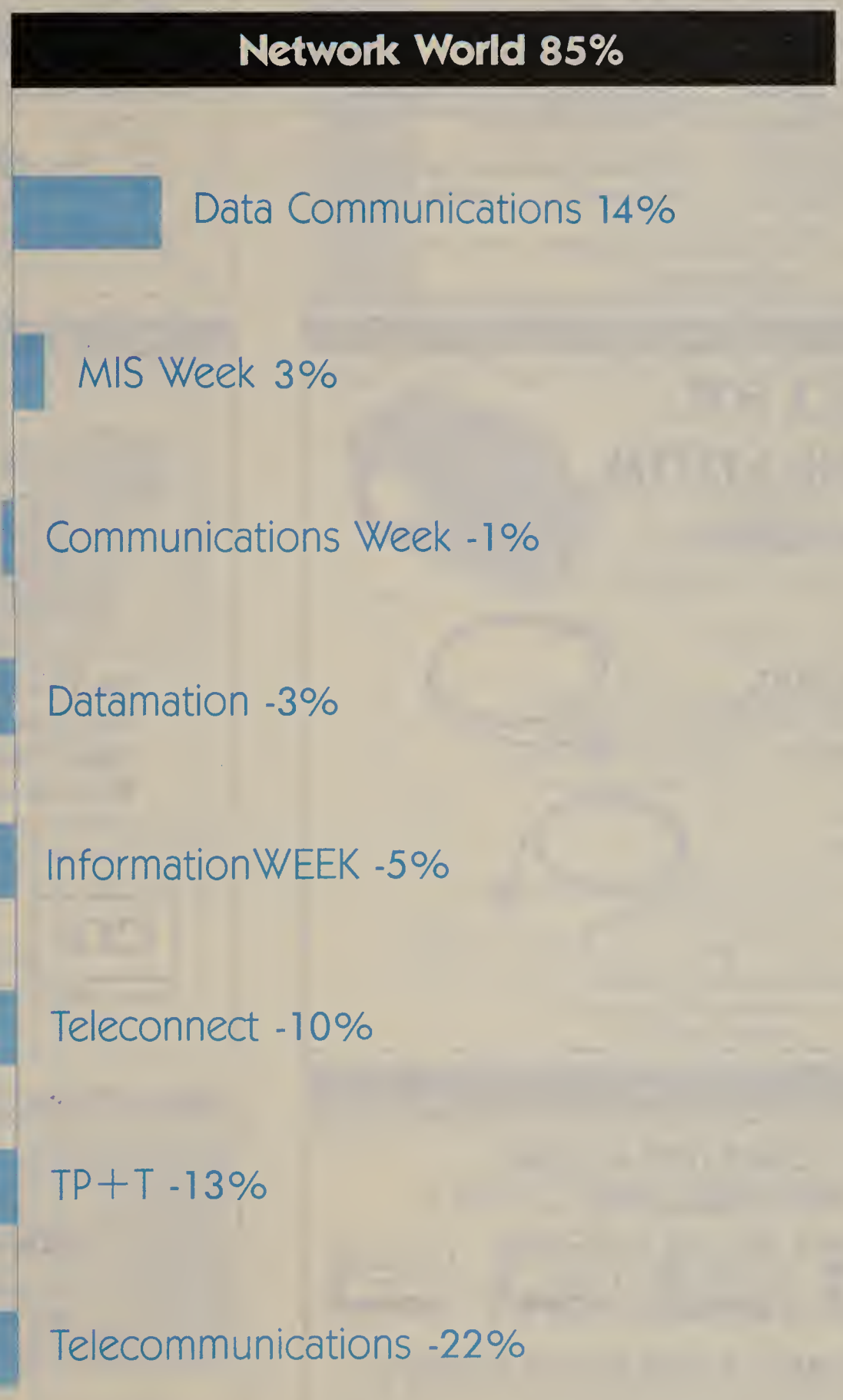

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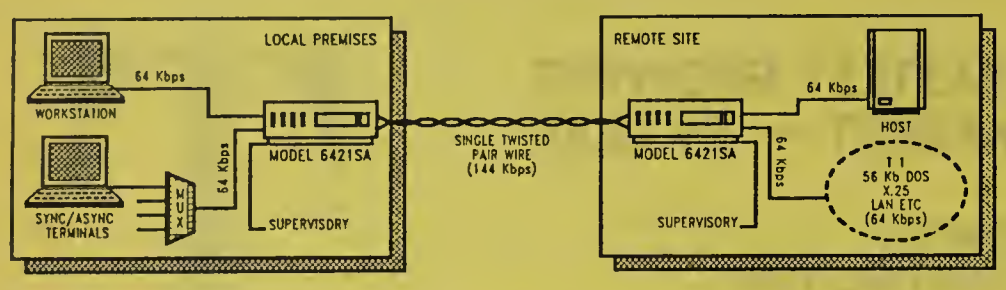

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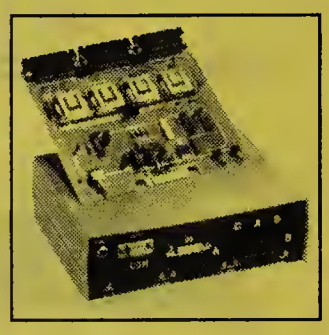

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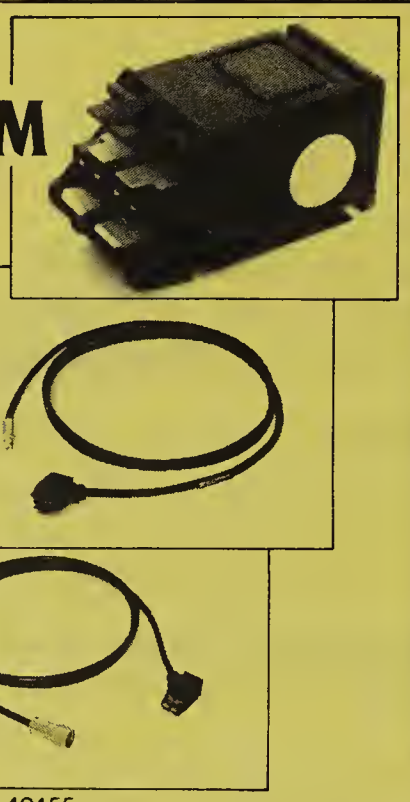

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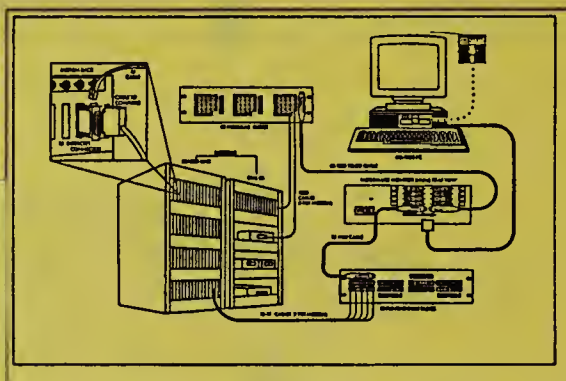

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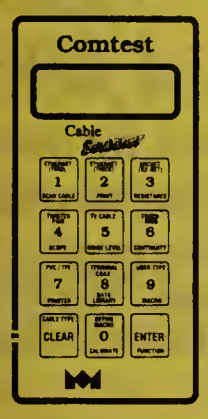

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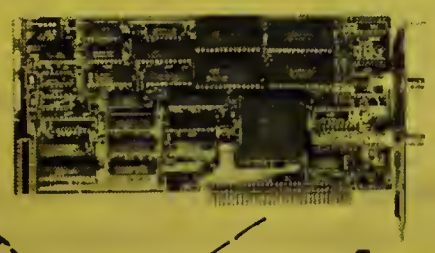

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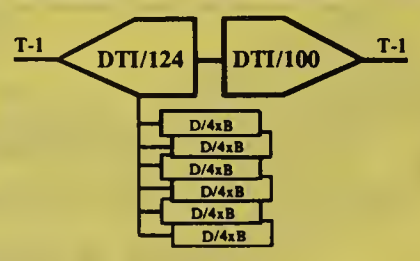

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SELLER: John S. Pereira, as Chapter 7 Trustee of Argo Communications., Debtor.

FOR FURTHER INFORMATION CONTACT: A. Peter Lubitz, Esq., Reavis & McGrath, attorneys for Trustee, 345 Park Avenue, New York, New York 10154; (212) 486-9500 or John Pereira, Trustee, 150 E. 52nd Street, New York, New York 10022; (212) 758-5777.

New York, New York

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continued from page 27

the systems to meet service requirements.

They also complete an estimate of the cost to purchase and install the new systems that will be needed once the field engineering dispatch consolidation is completed.

The manager now has the raw data he needs to prepare an operating plan and budget:

- Clear financial objectives.
- An outline of the movement of personnel for the coming year.
- The identification of strategic plans, such as the creation of field service central dispatch.
- An analysis of the capacity of systems to support required activity.

The manager is now ready to figure out how to provide service while limiting expenditures. Operations have to become more efficient. The manager has to use cost-containment programs as a primary source of funding.

Cost-containment programs

The manager proceeds to carefully review both monthly recurring expenditures and capital expenditures. The chart on this page displays the major line items as a percentage of total monthly expense.

Since equipment leases are not due to expire in the coming year, the manager concentrates his expense-avoidance efforts on the four remaining line items.

The department's analysis of calling patterns shows that by changing long-distance carrier services and installing appropriate foreign exchange routes, the monthly cost for lines and usage can be reduced 15% to 20%. This plan is figured into the budget, including the waiting period necessary before switching over to the new and less expensive services.

The manager then asks the private branch exchange vendor that is providing all services for maintenance, moves and changes to lock in a lower labor rate for the coming fiscal year. When that request is rejected, the department issues a request for proposal for competitive bids on maintenance, moves and changes. The net result is a projected 10% vendor labor savings for the coming year's projects.

At the same time, the department requests bids for the cable system and PBX equipment components necessary to provide for moves, changes and scheduled maintenance for the next year's activity. The manager finds that a 15% savings on materials is practical if the equipment is purchased from a single vendor on a scheduled basis.

The manager is still looking for a more direct way to justify support for the introduction of voice mail.

Over the past year, maintaining a proper telephone operator staffing level has been difficult. The use of temporary operator services has been high and has required pulling staff from other areas to cover the consoles.

Peak period calling, especially during company advertising programs that had not been scheduled with the telecommunications department, has backed up calls to unacceptable levels.

After careful analysis, the manager concludes that the introduction of a voice-processing system that includes an automated attendant and a small voice mail component could cut down the use of temporary operator services by 30%.

The system could also eliminate the equivalent of one full-time operator position by allowing calls unanswered after four rings to overflow to the automated attendant.

Because shifting expenditures from other areas could cover the additional expenses required for installation and training, the manager feels comfortable including the voice-processing purchase in this operating plan.

Organizing the presentation

It is now time to organize budget objectives, assumptions and programs into an operating plan and budget presentation that senior management can easily understand.

First, the document restates the corporate objectives included in the controller's original budget preparation document. Second, it lists corporate projects it addressed, such as the field engineering dispatch consolidation and reorganizations of facilities and personnel.

Third, the document briefly describes departmental service objectives. Fourth, it outlines cost-containment programs and the expected results. Finally, it presents the expense and capital budgets themselves.

Describing service objectives properly serves two purposes. First, it confirms the basis for measuring the performance of the department and department management. Second, it is essential for calculating personnel needs and developing functional requirements for support systems.

The justification of the voice-processing system by our manager is a good example. His departmental service objectives call for the operators to answer an incoming call within an average of four rings.

To meet this criterion, the department would have to budget an additional full-time operator and increase the temporary staff budget. The addition of an automated attendant system with a small voice mail capability would allow the department to continue to meet and, in fact, improve upon service objectives while reducing expenses for operator staffing.

The restatement of service objectives gets senior management to confirm performance criteria while providing an important part of the basis for expense levels. Other criteria to consider when determining service levels are system availability as well as the time necessary to install new terminal equipment and correct system problems.

In our case study, the format for budget submission is actually supplied by the controller and his staff. Financial analysts in the controller's office carefully review all documents and work with department managers to ensure that objectives and assumptions are succinctly stated and that they properly support the actual budgets.

The manager has to revise the package countless times. Selling the plan depends on getting senior management to agree to support the cost-containment programs and confirm the criteria for measurement of service levels. Once the package is accepted by the finance department, all programs defined in the package and carried in the budget are approved.

Summary

A few months after the budget is completed — and a week before the next one is about to start — our bloodied but unbowed telecommunications manager has recovered sufficiently to reflect upon the process and its results.

The manager decides that the main advantage of wrapping a comprehensive plan in with the budget is that projected cost savings can be used to introduce services not directly related to them. He reflects on his previously unsuccessful attempts to introduce voice mail to the corporation as an unbudgeted, stand-alone entity and compares it with the relative ease of approval through the budget process.

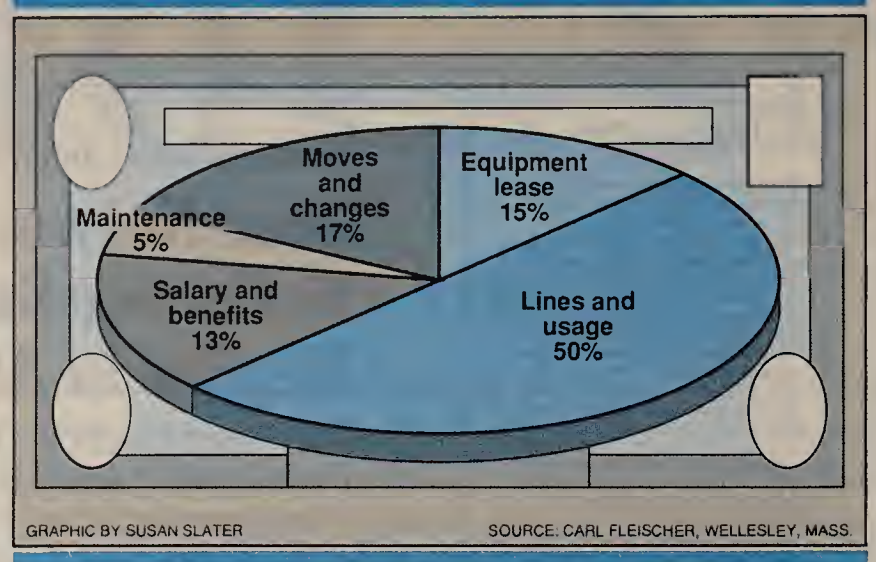
He realizes that the controller allowed significant flexibility to managers whose plans minimized the risks of dealing with future unbudgeted expenditures. By getting on friendly terms with his budget, the manager was able to obtain approval to install a system for which he had struggled unsuccessfully in the past.

He also realizes that there was risk in this approach for himself and the department. By establishing objectives tied to the budget, the manager had committed the department to achieving goals that were measurable in financial terms. His monthly status reports must now reconcile the budget and its supporting programs with the actual performance of the department.

Our manager also knows that if the staff performs to its past high levels of ability, the department will exceed the goals stated in the budget. He is determined that during the next budget process, he will keep a few cost-containment cards up his sleeve just in case of extraordinary requests upon the department.

This budget process has taught our manager some unforgettable lessons. The budget can be a manager's ally, rather than a roadblock, in carrying out needed improvements.

Monthly expense line items



GRAPHIC BY SUSAN SLATER — SOURCE: CARL FLEISCHER, WELLESLEY, MASS.

> To prepare an operating plan and budget, the manager needs clear financial objectives. ▲▲▲

> Describing service objectives is essential for calculating personnel needs. ▲▲▲

POS nets handle gift returns

continued from page 3

bit/sec or 9.6K bit/sec.

On the East Coast, Woodward & Lothrop, Inc. is also trying to streamline the return process. "The day after Christmas, [we] set up certain outposts throughout the store just to handle returns," said Barry Berndsen, divisional vice-president of computer services.

And to help obtain proper SKU numbers for returned items, Woodward & Lothrop gives buyers a slip that can be included with the gift. When the item is being returned, clerks enter data from the slip, which a host-based application converts to the proper SKU and price.

Woodward & Lothrop uses an IBM 3680-based POS network in its 33 stores in Baltimore, Washington, D.C. and Philadelphia. The 3680 net includes POS terminals linked to IBM 3651 controllers in each store. The 3651s in Baltimore and Philadelphia are linked to IBM mainframes in the company's Alexandria, Va., data center via leased lines operating at 9.6K bit/sec. The Washington, D.C. stores are linked to the data center via a 9.6K bit/sec channel within a T-1 line that supports a private voice and data network.

Branden's, a division of Dayton-Hudson Corp. with 10 retail stores in the Southeast, also reconfigures in-store POS terminals to support return transactions, said Reiner Gellrich, manager of systems operations and technical services. Branden's uses an NCR Corp. 9100-based POS net. NCR POS controllers in each of the 10 stores are linked to a central NCR controller in Branden's Minneapolis data center via 9.6K bit/sec leased lines. That controller prepares a magnetic tape of daily sales and returns, which is later loaded onto an IBM mainframe for processing.

Aside from the additional terminals for returns, Branden's needed to do little else to handle the volume of transactions on Dec. 26. He said the POS network is engineered to handle the volume of traffic on those peak days.

The POS network supporting Filene's Basement, Inc.'s 22 stores spreading from New Hampshire to Pennsylvania also has little problem with the volume of transactions on Dec. 26 because it is designed to support transaction volume generated on the day after Thanksgiving.

"It's been designed to more or less handle any type of volume we can throw at it, and hopefully that is a lot." said Lawrence Raleigh, director of electronic POS, store systems and telecommunications.

Filene's Basement currently uses a mix of IBM 3680 and newer 4680 POS equipment. In-store POS terminal controllers are linked to IBM hosts at the store's Wellesley, Mass., data center over 4.8K bit/sec or 9.6K bit/sec leased lines.

EDI delivers dividends

continued from page 1

During the nine years Cross has been with the company, he has seen EDI evolve from a technology used mainly by companies in the freight industry to one employed by a broad cross section of U.S. businesses.

Development of the ANSI X.12 EDI standard illustrates that evolution, he said.

The X.12 standard had its roots in the Transportation Data Coordinating Committee, a group of railroad, trucking and shipping companies that recognized the benefits of EDI and worked to develop standard EDI formats, Cross said.

The group later merged with another organization, the Electronic Data Interchange Association, and recently held its 20th annual conference ("EDI users talk strategy at summit," *NW,* Dec. 19).

"It's not a big strategic tool anymore if your definition of a strategic tool is something that somebody else doesn't have, or your tool is materially superior," Cross said. "We may have a strategic advantage to the extent that we will do just about anything a shipper wants, but anybody else can be just as accommodating if they set their minds to it.

"We're probably the most EDI-intensive carrier in the country," Cross said. "And it's not because we're geniuses or farsighted. It's just because of the nature of our business."

Leaseway's EDI applications run the gamut from those based on the X.12 standards to applications specific to a customer, he said.

In some cases, Leaseway and its customers actually access one another's networks to ferret out pertinent information.

EDI is especially important with the automobile manufacturing industry, which generates about 40% of Leaseway's revenue. Leaseway hauls automobile parts to assembly plants and fully built cars to auto dealers.

Auto-hauling alone accounts for almost one-third of Leaseway's business, Cross said. The company hauls about three million cars per year and uses EDI to exchange with automakers information that is needed to set up shipping and routing schedules.

"If we had to do this manually, we'd have hundreds of people doing it," Cross said.

The EDI methods used with each automaker vary. For the most part, auto manufacturers transmit information over dial-up lines to a Unisys Corp. 1100/70 Series mainframe at the company's data center here.

The mainframe sorts the data, generates shipping schedules and transmits them to workstations at each of the 700 locations from which Leaseway dispatches its trucks. (Some locations are Leaseway-owned terminals but most are shared with other transportation companies or with customers, Cross said.) Workstations at the trucking depots also upload billing, payroll or truck location data to the mainframe.

Using EDI, Leaseway sends notification to the appropriate automaker for each car it picks up and delivers. For some manufacturers, billing is also done using EDI, Cross said.

In addition to shipping cars, Leaseway has a hand in building them by shipping parts from suppliers to assembly plants. To handle that business, Leaseway three years ago established a subsidiary, Logistics Partners, Inc. of Chicago.

Logistics Partners ships parts to assembly plants on a just-in-time basis, meaning parts arrive just when the plant needs them and inventory is kept to a minimum.

> "We're probably the most EDI-intensive in the country, not because we're geniuses but because of the nature of our business."
>
> ▲▲▲

Logistics Partners uses automakers' assembly schedules to determine when each plant will need parts. Then it determines when the various vendors should be ready to ship those parts in order for them to arrive just in time, said Ravi Sankar, manager of technical support for Logistics Partners' marketing and business development department.

"It would be a very tedious manual process, which would increase the margin of error tremendously" if EDI were not available, he said.

For one automaker, Logistics Partners has access to a queue on the car manufacturer's mainframe that contains data detailing all the parts Logistics Partners should ship. The data is downloaded via a dial-up link to Leaseway's mainframe, which then sends information to a Leaseway-owned personal computer in the automaker's plant.

Using Leaseway software, the personal computer produces shipping schedules to fit the automaker's assembly plans and optimize Logistics Partners' truck route planning. Later, the car manufacturer uses the schedule to dictate shipping dates to its suppliers.

In addition to the auto industry, Leaseway ships products for such retailers as Sears, Roebuck & Co., Whirlpool Corp., E.I. du Pont de Nemours & Co., Inc., Shell Oil Co., A&P and Safeway Stores, Inc.

Sears and Whirlpool are the only customers to date for which Leaseway has established leased-line connections. From the Beachwood data center, Leaseway has a dedicated circuit to a Sear's IBM mainframe in Columbus, Ohio, and to a Whirlpool data center in Findlay, Ohio.

Both companies send batch transmissions detailing their shipping requirements to an IBM mainframe that handles all of Leaseway's processing, except for the automobile transportation business.

To track the status of their freight, Sears and Whirlpool can tap directly into the appropriate application running on Leaseway's IBM host, Cross said. This eliminates the need for an intermediary to look up such data, and it saves both time and money.

Cross could not detail exactly the cost savings Leaseway has realized by using EDI.

N.Y. Tel awarded contract for net

continued from page 2

and it is a known quantity," Goodbody said.

Initially, the network will be targeted for use by securities traders. It is a reconfigurable network, designed to let securities firms easily add or delete trading clients.

Currently, security trading companies communicate with their clients via point-to-point private lines, according to William McGruther, managing director of customer network design at New York Telephone.

In order to establish private telephone links between trader and client offices, it is necessary for the phone company to physically add wires.

"What we're now setting up is a computer network that will let users change their own telephone circuits simply by calling the network manager at New York Telephone," Goodbody said.

This means that reconfiguring the network to include additional trading clients can be accomplished in hours or minutes, rather than the days or weeks that it currently takes.

Plans call for limited implementation of the network to begin in the middle part of this year, with full operation slated for the first quarter of 1990, McGruther said.

The 16 participating SIA member firms that will be linked to the network are: Cowen & Co.; Dean Witter Reynolds, Inc.; Donaldson, Lufkin & Jenrette, Inc.; Drexel Burnham Lambert, Inc.; First Boston Corp.; Goldman, Sachs & Co.; Kidder, Peabody & Co., Inc.; Merrill, Lynch, Pierce, Fenner & Smith, Inc.; Morgan Stanley & Co., Inc.; Nomura Securities International, Inc.; Paine-Webber, Inc.; Prudential-Bache Securities, Inc.; Salomon Brothers, Inc.; Shearson Lehman Hutton, Inc.; Smith Barney, Harris Upham & Co., Inc.; and Thomson McKinnon Securities, Inc.

AT&T declares war on vendors

continued from page 1

assistant vice-president and analyst at the brokerage firm of New Japan Securities International in New York. "It is not going to tolerate losing market share in an uncompetitive environment."

The General Business Systems unit planned to file the anti-dumping petition on Dec. 28 with the U.S. Department of Commerce and the U.S. International Trade Commission against firms from Japan, South Korea and Taiwan. This marks the first time AT&T has officially leveled such charges against any foreign manufacturer.

In the filing, the company was expected to show how dumping has led to declines in sales and manufacturing for AT&T and other U.S. manufacturers of communications equipment.

AT&T planned to ask the U.S. government to halt the alleged dumping and to levy the necessary penalties against guilty firms. Among the companies named in the petition are Japan's Toshiba Corp. and South Korea's Goldstar Telecommunications Co., Ltd., both of which have joint venture agreements with AT&T in the Far East.

The company said it began investigating the dumping about a year ago when it realized that even major cost-cutting was ineffective in competing against foreign manufacturers. Such dumping — which does not necessarily involve selling products below cost — is in violation of international trade laws.

The Department of Commerce has 20 days from the filing date to decide whether AT&T's claims merit investigation. If the agency sides with AT&T, the U.S. International Trade Commission will begin an investigation to determine whether the alleged dumping has harmed the U.S. industry. The commission will make its preliminary determination within 45 days.

Foreign firms found guilty of dumping could be hit with fines or tariffs that would make up the difference between the vendor's domestic and U.S. prices. But neither the Department of Commerce nor the International Trade Commission is expected to complete final reviews for at least a year.

AT&T said the foreign companies' prices in their home markets averaged more than 75% higher and in one case 170% higher than in the U.S. Roughly 25% of the 48 models of key telephone systems and small PBXs sold by foreign firms in the U.S. are priced 100% higher here than they are in their home markets, AT&T said.

U.S. market share down

U.S. vendors' share of the $4 billion small business communications equipment market in the U.S. has fallen to 35% this year from 55% three years ago, AT&T said. Japan, South Korea and Taiwan, on the other hand, have increased their combined U.S. market presence to 60% from 40% three years ago.

Prices on small business communications equipment have fallen about 10% annually for the past five years, Blanchard said. AT&T sells its equipment, which is made in Dallas, Denver and Shreveport, La., for between $2,000 and $50,000.

Other firms identified in the AT&T petition are: Matsushita Communication Industrial Co., Ltd.; Hasegawa Electric Co., Ltd.; Iwatsu Electric Co., Ltd.; Meisei Electric Co., Ltd.; Nakayo Communications; Nitsuko Corp.; and Tamura Electric Works, Ltd. from Japan; Oriental Precision Co., Ltd. and Samsung Semiconductor and Telecommunications Co., Ltd. from South Korea; and Sun Moon Star Corp. from Taiwan.

Analyst Boczar said that while he cannot substantiate dumping by foreign firms, the fact that AT&T would file a petition lends credence to the claim.

"Many imported goods are making inroads as this becomes a commodity business," Boczar said. "Many U.S. companies are exiting the business, and margins are under severe pressure. That's how competitive this market is."

Bob Wilkes, telecommunications analyst at the brokerage firm of Brown Brothers Harriman & Co. in New York, said AT&T is becoming more profit-oriented and would probably get out of the small business equipment market if it believed it could not make a profit.

"AT&T would rather stay in the business, because many of its long-distance customers are equipment customers too," Wilkes said.

A number of U.S. manufacturing firms producing goods ranging from semiconductors to orange juice have lodged similar dumping complaints — sometimes successfully — with the U.S. government over the past few years.

Both the Communications Workers of America and the International Brotherhood of Electrical Workers have issued statements in support of AT&T's petition.

In a statement issued by the North American Telecommunications Association (NATA) in response to the announcement of AT&T's filing, NATA President Edwin Spievack encouraged the U.S. government to proceed carefully in investigating and acting on the charges.

"NATA has not seen the evidence that AT&T presumably intends to file with the federal government," Spievack said. "We believe, however, that it is vital that the government take a prudent approach before acting in a way that could impede the numerous benefits that open competition has brought to the American people."

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Moderator: **Bruce Hoard, *NetworkWorld***
Dan Richards • Howard Frank • David Edison
James Herman • William Gilbert • Peter Hicks

January 20, 1989
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- How do users view AT&T's Universal Network Management Architecture (UNMA)?
- How many third-party network management companies exist and what kind of products do they offer?
- How much network management capability is built into the various long-haul carrier services?
- How can you cost justify network managment purchases?
- What's the difference between performance measurement and diagnostics?
- What is the Network Management Forum?

● Purpose

The purpose of this seminar is to familiarize participants with both basic and advanced elements of network management hardware, software and services. It is further the purpose to show, through actual user experiences, how network management tools can create more cost efficient networks.

Network management for both large and small networks will be addressed. The role of modems in multi-drop networks will be discussed along with the network management capabilities of T-1 multiplexers.

Products and services from both large and small vendors will also be discussed, as the panel attempts to cover the widest possible spectrum of offerings.

Issues of interest will vary widely. This seminar will be of equal value to data oriented computer system departments and voice oriented telecommunications departments.

Dan Richards

Dan Richards is IBM's manager of network management products, including Netview and Netview PC. Since starting at IBM in 1959, he has held a variety of positions, including senior system engineer, network control products development and test manager and network control products product manager.

Howard Frank

Howard Frank is chairman of Network Management, Inc. Past president and CEO of Contel Information Systems, he has served as visiting consultant in charge of network analysis for the Executive Office of the President of the United States.

David Edison

David Edison is executive vice president of Corporate Information and Communications Systems, Westinghouse Electric Corp. He has responsibility for planning and operating the corporate telecommunications network, a $60 million enterprise. He started at Westinghouse in 1963.

James Herman

James Herman is president of Future Network Consulting. In over 14 years of computer and communication system experience, he has managed some of the world's most complex networks, including the ARPANET, the Defense Data Network and the DARPA internet.

William Gilbert

William Gilbert is responsible for planning AT&T's integrated Network Management program. He works closely with Universal Network Management Architecture and the Network Management Protocol, AT&T's Open Systems Interconnect network management protocols.

Peter Hicks

Peter Hicks is senior director, Network Design, Planning and Implementation with Sears Communications Network, Inc. He has 18 years of experience in the telecommunications industry. He was manager of Network Systems for Standard Oil of Indiana from 1980 to 1985.

Syllabus

IBM

- IBM Strengths and Weaknesses of Netview and Netview PC
- Network Management for OS/2 Users Netview versus OSI Network Management
- Netview versus AT&T and DEC Network Management within SAA Alliance with PacTel Spectrum

Digital Equipment Corporation

- Enterprise Management Architecture (EMA)
- EMA Compatibility with OSI Configuration Management Information Protocol (CMIP)
- Third Party Vendors under EMA Umbrella

AT&T

- Strengths and Weaknesses of UNMA
- Monitoring 400 PBXs Simultaneously with Accumaster

Hewlett Packard

- OpenView

Modem-Based Network Management

- The Necessity to Differentiate Commodity Products
- Proprietary versus Open Systems
  - Racal Milgo Codex
  - Atlantic Research
  - AT&T Case Digilog
  - Dynatech Infinet Paradyne
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Study cites 'new age'

continued from page 1

In 1983, companies devoted an average of 2.5% of their total operating budget to communications. By 1988, that figure rose to 2.8%, a 12% net increase in communications spending. Companies projected that by 1993, 3.8% of their overall operating budget will be allocated to communications, a net increase of 36% from this year and 52% from 1983 (see graphic on page 1).

In contrast, spending on DP as a percentage of total operating budgets increased a little over 4% from 1983 to 1988 and is projected to increase 14% by 1993.

Spending on DP still accounts for a greater share of operating budgets than spending on communications. On average, companies this year allocated 5% of their budget to DP and 2.8% to communications.

> Much of the money in communications will go to paying the salaries of new employees.
>
> ▲▲▲

"The period between 1984 and 1988 can be characterized as an era of reconfiguration for the corporate telecommunications organization as it adapted to the postdivestiture world," said Jerry Stern, director of research for The Eastern Management Group.

"Not only will budgets and personnel grow, but the charters and mission statements of corporate telecommunications departments will also expand," Stern said.

Companies shift gears

The study revealed that 76% of Fortune 1,000 companies now place control of network organizations with DP or information systems departments. Five years ago, just 37% of Fortune 1,000 companies gave control of communications to the DP or information systems department.

In 1983, communications came under the jurisdiction of administration in 42% of the companies, finance in 13% of the companies and information services in 4% of the companies.

Today, less than 20% of Fortune 1,000 companies house communications departments within administration, human resources, finance or information services departments.

"The integration of voice and data technologies, like ISDN, is causing most companies to merge their communications and data processing departments," Stern said. "I expect this to be a permanent shift."

The study showed that half of Fortune 1,000 companies expect their communications budget to grow at a rate of 10% or more during the next five years.

Fifteen percent of Fortune 1,000 companies expect their communications budget to grow at rates greater than 25%, and 4% of companies said spending on communications would increase by 50% or more.

Only 10% of companies said they thought their communications budget would decline or stay even, the study said.

"Communications budgets are rising because businesses are decentralizing operations and giving unit managers more discretion over budgetary spending," Stern said.

Stern said unit managers are devoting more money to communications because they recognize the strategic advantages it can offer.

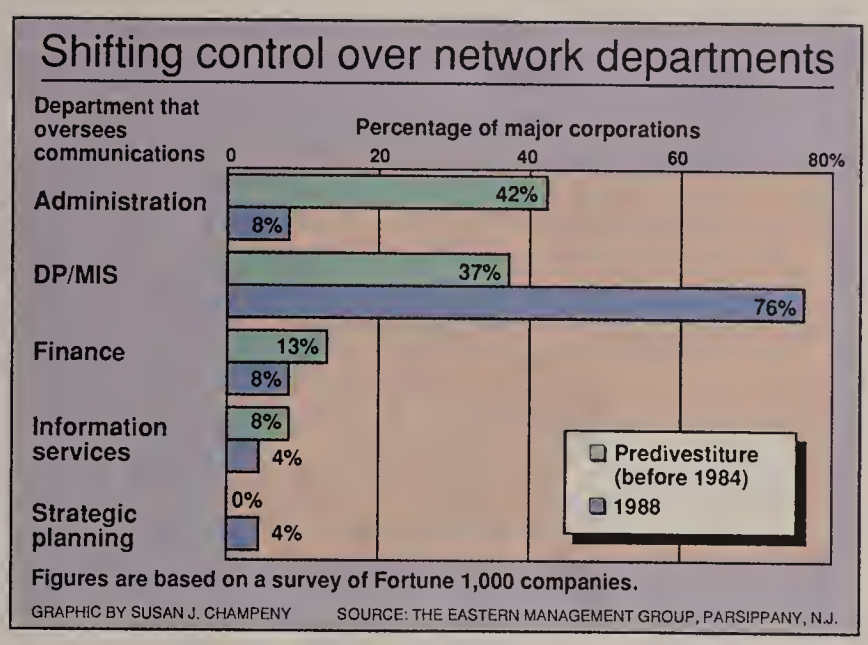
Much of the money moving into communications operations in the coming years will go toward paying the salaries of new employees.

Rising personnel budgets

Half the companies surveyed said spending on personnel would increase by more than 10%. Thirteen percent of companies in the study said they expect to increase personnel budgets more than 50%.

According to Stern, the largest Fortune 1,000 companies are the ones planning to make hefty spending increases on employees.

"Bigger companies are very concerned about planning for telecommunications," he said. "Their long-range plans call for expanding communications staffs."



Calendar

Jan. 15-18, Honolulu — Pacific Telecommunications Connectivity: Users, Networks and Information Services. Contact: Pacific Telecommunications Council, 1110 University Ave., Honolulu, Hawaii 96826.

Jan. 18-19, Dallas —Introduction to LANs: Getting Your Feet Wet. Contact: InfoLAN Seminar Series, P.O. Box 162323, Austin, Texas 78716.

Jan. 18-21, Palm Springs, Calif. — National Association of Telecommunications Dealers 1989 Winter Conference. Contact: National Association of Telecommunications Dealers, 1255 23rd St. N.W., Washington, D.C. 20037; (202) 872-8420.

Jan. 20-22, San Francisco — MacWorld Expo. Contact: Mitch Hall Associates, P.O. Box 155, 1200 East St., Westwood, Mass. 02090; (617) 329-7466.

Jan. 22-25, Salt Lake City — 4th Telecommunications Conference. Contact: Conferences & Institutes, 2174 Annex Building, University of Utah, Salt Lake City, Utah 84112; (801) 581-5809.

Jan. 23-25, San Diego — Network Management. Contact: Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038; (212) 233-1080.

Jan. 25-27, Dallas — Traffic Engineering and Network Design. Contact: International Communications Association, 12750 Merit Drive, Dallas, Texas 75251.

Jan. 30-Feb.1, New York — Management Skills and Techniques for New and Prospective Managers. Contact: New York University, School of Continuing Education, Seminar Center, 575 Madison Ave., New York, N.Y. 10022.

Jan. 30-Feb. 3, San Diego — USENIX Association Winter 1989 Technical Conference. Contact: USENIX Association, P.O. Box 385, Sunset Beach, Calif. 90742; (213) 592-1381.

Jan. 31-Feb. 3, Los Angeles — MAP/TOP: Technical Introduction & Implementation Status Report. Contact: John Valenti, Integrated Computer Systems, 5800 Hannum Ave., Culver City, Calif. 90231.

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